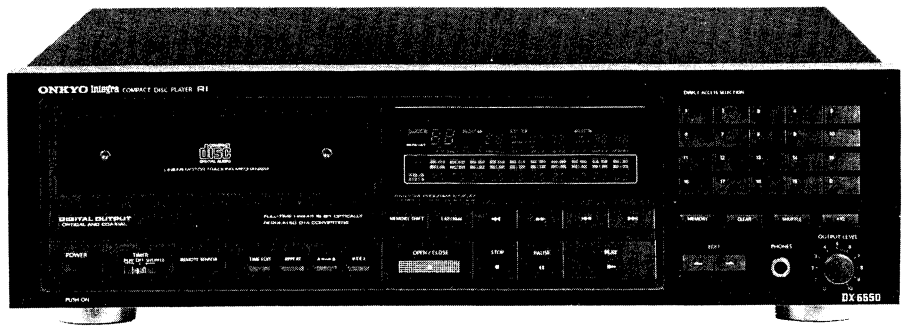
SERIAL NO. 3307

ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER
MODEL DX-6550



Black and silver models

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Signal readout system:	Optical non-contact
Reading rotation:	About 500~200 r.p.m. (constant linear velocity)
Linear velocity:	1.2~1.4m/s
Error correction system:	Cross interleave readsolomon code
Decoded bits:	18 bits linear
Sampling frequency:	176.4kHz (four-times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5Hz~20kHz
Total harmonic distortion:	0.003% (at 1kHz)
Dynamic range:	96dB
Signal to noise ratio:	96dB
Channel separation:	96dB (at 1kHz)
Wow and Flutter:	Below threshold of measurability
Power consumption:	15 watts
Output level:	2 volts r.m.s.
Dimensions (W×H×D):	435×131×365 mm 17-1/8″×5-1/8″×14-7/16″
Weight:	8kg, 17.6 lbs.

Specifications are subject to change without notice.

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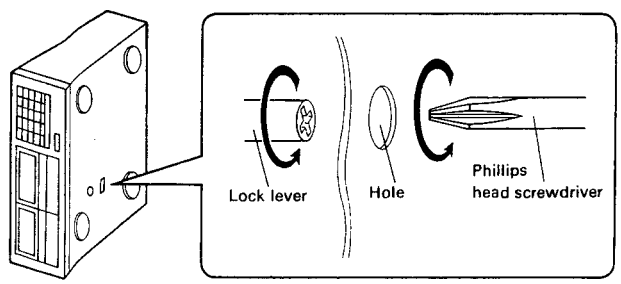
SERVICE PROCEDURES

1. How to Release the Transport Lock

To protect the optical assembly including the laser pickup from vibration related damage during shipping, this unit is equipped with a transport lock lever located on the base.



- Use a screwdriver to turn the lock lever (about 90°) in the round hole in the direction of arrow (C).
- Before transporting the unit again, stand it with its left side facing down, and turn on the power. Wait 2-3 seconds and then turn the lock lever in the opposite direction of the arrow.

Fig. 1

2. Safety-check out

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Connect the insulating-resistance tester between the plug of power supply cable and chassis.

Specifications: more than 10Mohm at 500V.

3. Procedures for replacement of flat packaged ICs

1. Tools to be used:

(1) Soldering iron . . . . Grounded soldering iron or soldering iron with leak resistance of 10 Mohms or more.

Form of soldering iron's tip:

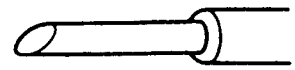


Fig. 2

(2) Magnifying glass . . . for checking of finished works

(3) Tweezers . . . . . for handling of IC and forming of leads

(4) Grounding ring . . . . Countermeasure for electrostatic breakdown

(5) Nipper . . . . . for removing defective IC

(6) Small brush . . . . . for application of flux

2. Work Procedures:

(1) Remove the defective IC

Cut all leads of the defective IC one by one using a nipper and remove the IC.

(2) Clean the pattern surface of the PC board.

Get rid of the remaining leads and solder.

(3) Check and from the leads of the new flat packaged IC to be installed.

From every lead on the new IC using a pair of tweezers, so that all of them are aligned neatly without being risen, twisted or inclined toward one side. Especially the rising portion of every lead must be formed with greatest care.

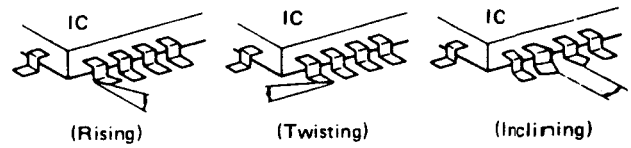


Fig. 3

(4) Apply flux to the PC board.

Apply flux to the pattern surface of the PC board which has been cleaned, as shown in the illustration. The area to be applied with flux is the portion of about 2.5mm in width where the IC's leads are to be soldered.

Be careful to apply minimum amount of flux required so as not to smear it on unwanted areas.

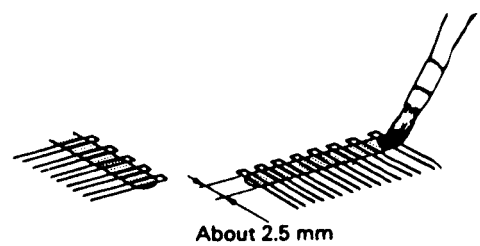


Fig. 4

(5) **Temporarily tighten the IC**

Carefully align the pattern and IC's leads, so that the IC will be temporarily tightened to the pattern on the four leads at the corners. At this time, soldering is required, but no need to apply soldering material.

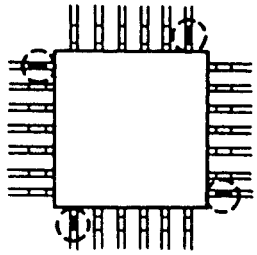


Fig. 5

(6) **Apply flux to IC's leads**

Apply flux to the areas of IC's leads where soldering is to be performed. Be careful not to smear flux on the root portion of any lead or the body of IC.

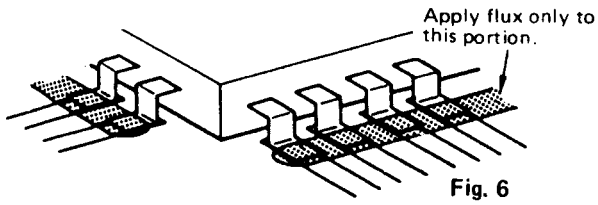


Fig. 6

(7) **Soldering**

While attaching the tip of the soldering iron to the soldering point as shown in the illustration, feed 2 –5mm of soldering wire. Then, slowly move the iron in the direction indicated by the arrow in the illustration, so that the leads will be soldered to the pattern. Move the iron in the rate of approximately 1cm in 5sec. Proceed with your work while confirming a clean fillet of solder is formed on each lead, subsequent to the melting of flux.

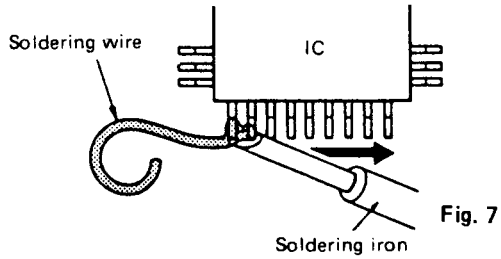


Fig. 7

CAUTION

1) If you move the iron too quickly, loose soldering is likely to result.
2) Be especially careful when soldering the first lead where loose soldering is most liable to be formed.

(8) **Check the results**

When soldering of all leads is finished, check the soldered portion on every lead with a magnifying glass. A tester must not be used or checking of any soldered position

NOTE ON COMPACT DISC

- **Holding Compact Discs**

Hold Compact Discs by the edges so that you do not touch the surface of disc. Remember that the side of the disc with the "rainbow" reflection is the side containing the audio information.

Do not attach tape or paper to the label side of the disc and always be careful not to leave fingerprints on the side that is played.

- **Storing Compact Discs**

Store Compact Discs in a location protected from direct sunlight, high heat and humidity and extremely high and low temperatures. Discs should never be left in the trunk or interior of an automobile in the sun since the temperature can become very high in such a closed environment.

Always store Compact Discs in the holders in which they were sold. Never leave a disc in the player's disc holder for a long period of time.

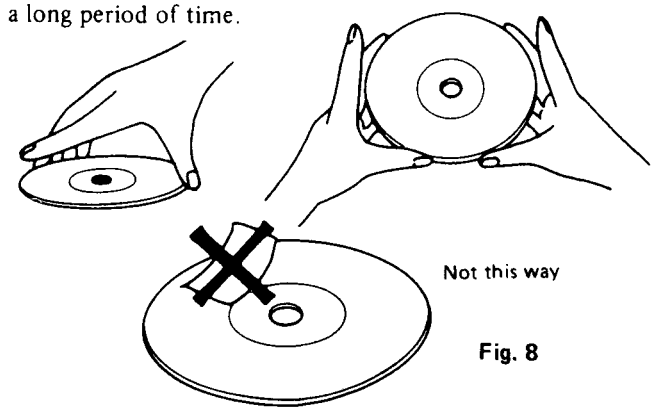


Fig. 8

- **Cleaning Compact Discs**

Before playing a disc wipe off the playing surface with a soft cloth to remove dust and other soil. Wipe the surface in straight lines from the center of the disc outward, not in a circular motion as you would with a phonograph record.

Do not use benzene, chemical cleansers or phonograph record cleaning solutions to clean Compact Discs. Also avoid static electricity prevention solutions since they can damage the surface of Compact Discs.

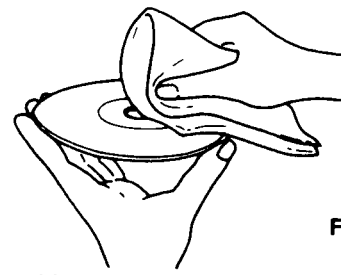


Fig. 9

Problems Caused by Dew

Dew can form inside a Compact player when it is brought from a cold environment into a warm room, when a room is rapidly heated and if a player is left in a humid environment.

This dew can prevent the laser pickup from reading the data contained in the pits in the disc surface. If the player does not operate properly because of dew, remove the disc and leave the player's power switch on for about one hour to remove all moisture.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

Laser Diode Properties

- Material: GaAS/GaAlAs
- Wavelength: 780nm
- Emission Duration: continuous
- Laser output: max. 0.5mW*

  *This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

LASER WARNING LABEL

The label shown below are affixed.

1. Warning label

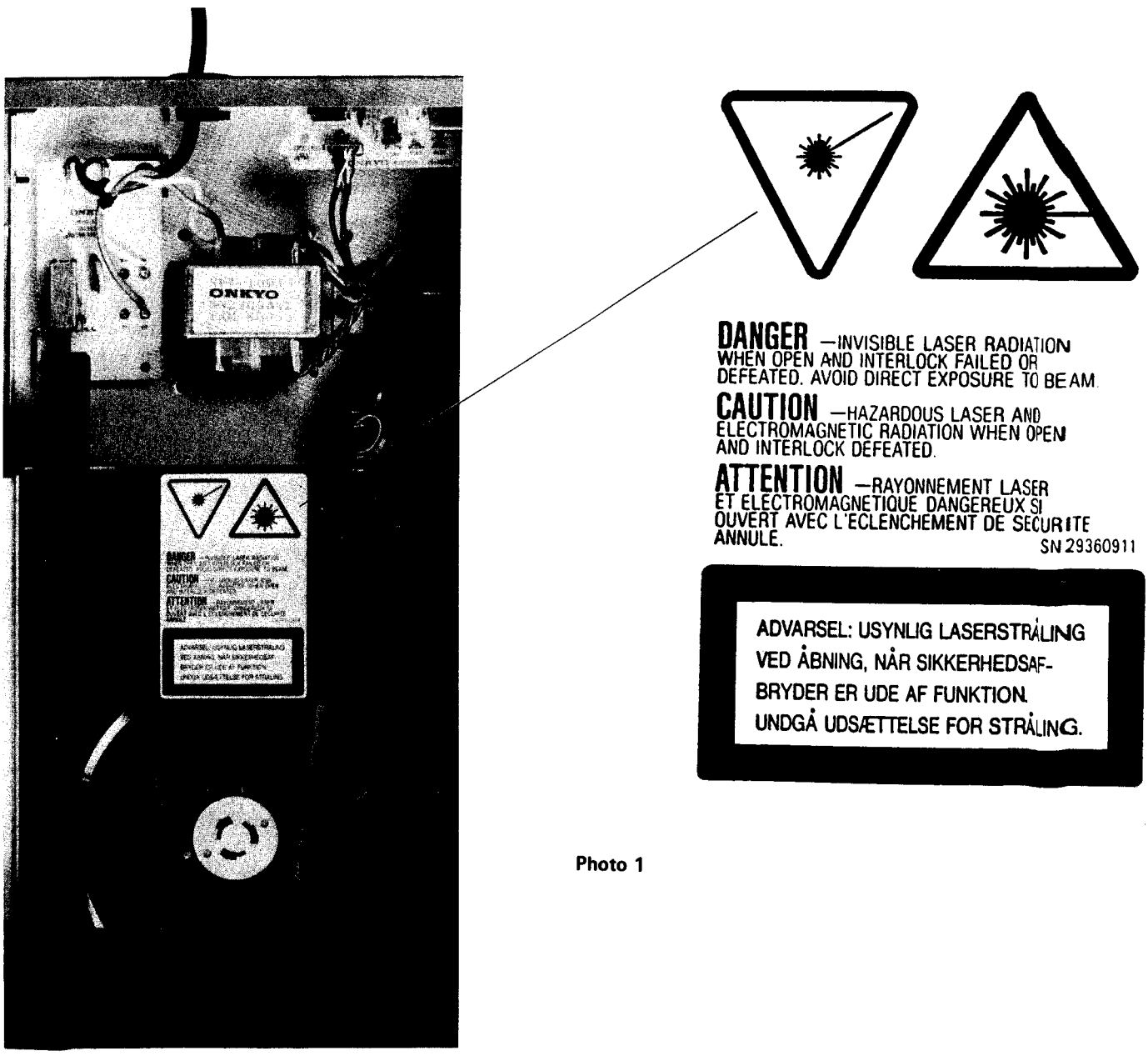

ONKYO
DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLENCHEMENT DE SECURITE ANNULE.
SN 29360911
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAF-BRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

Photo 1

2. Class 1 label

This label is located on the back panel.

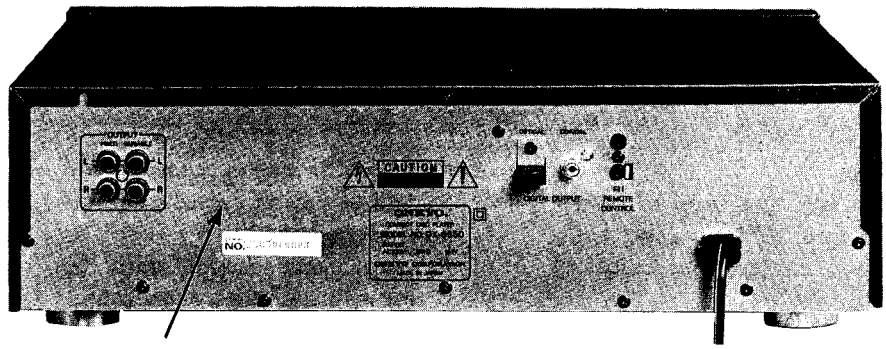
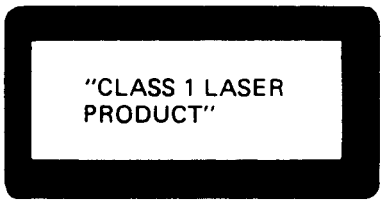


Photo 2

ADVARSEL



Denne mærkning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilladelig kraftig stråling.

APPARATET BØR KUN ÅBNES AF FAGFOLK MED SÆRLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

Indvendigt i apparatet er anbragt den her gengivne advarselsmærkning, som advarer imod at foretage sådanne indgreb i apparatet, at man kan komme til at udsætte sig for laserstråling.

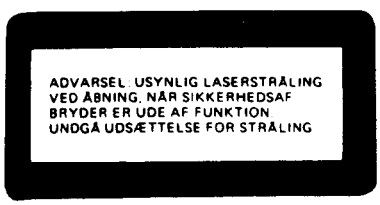


Fig. 10

VAROITUS! Laite sisältää laserdiodin, joka lähettää (näkymätöntä) silmille vaarallista lasersäteilyä.

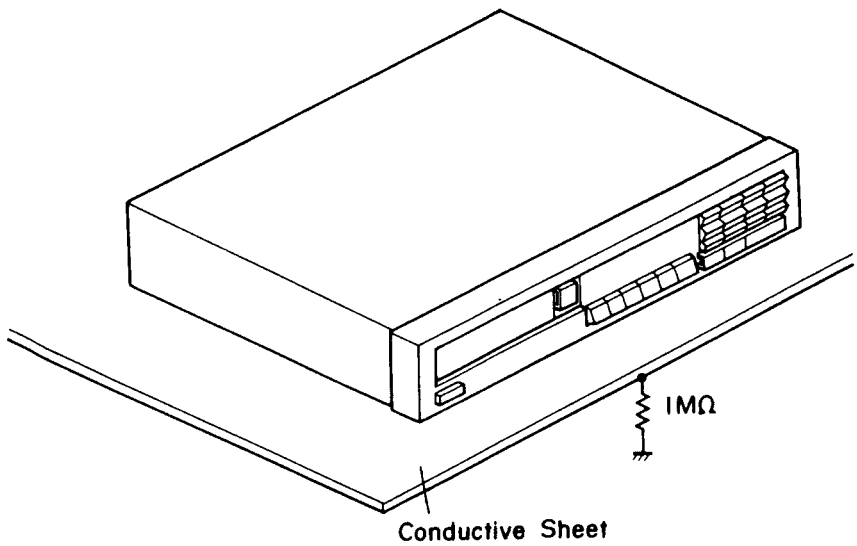
CAUTION ON REPLACEMENT OF PICKUP

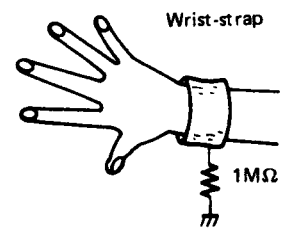
The laser diode in the optical pick-up block is so sensitive to static electricity, surge current and etc. that the components are liable to be broken down or its reliability remarkably deteriorated.

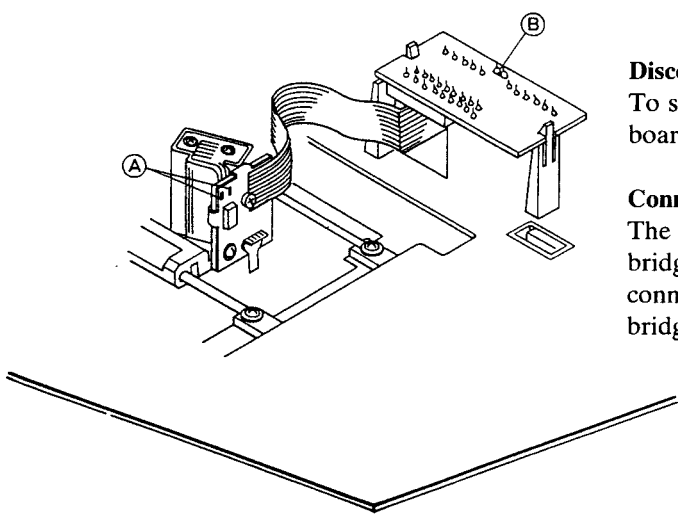
During repair, carefulley take the following precautions. (The following precautions are included in the service parts).

PRECAUTIONS

1. **Ground for the work-desk.**
   Place a conductive sheet such as a sheet of copper (with impedance lower than $10^6\,\Omega$) on the work-desk and place the set on the conductive sheet so that the chassis.
2. **Grounding for the test equipment and tools.**
   Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.
3. **Grounding for the human body.**
   Be sure to put on a wrist-strap for grounding whose other end is grounded.
   Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.
4. **Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.**
5. **Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.**





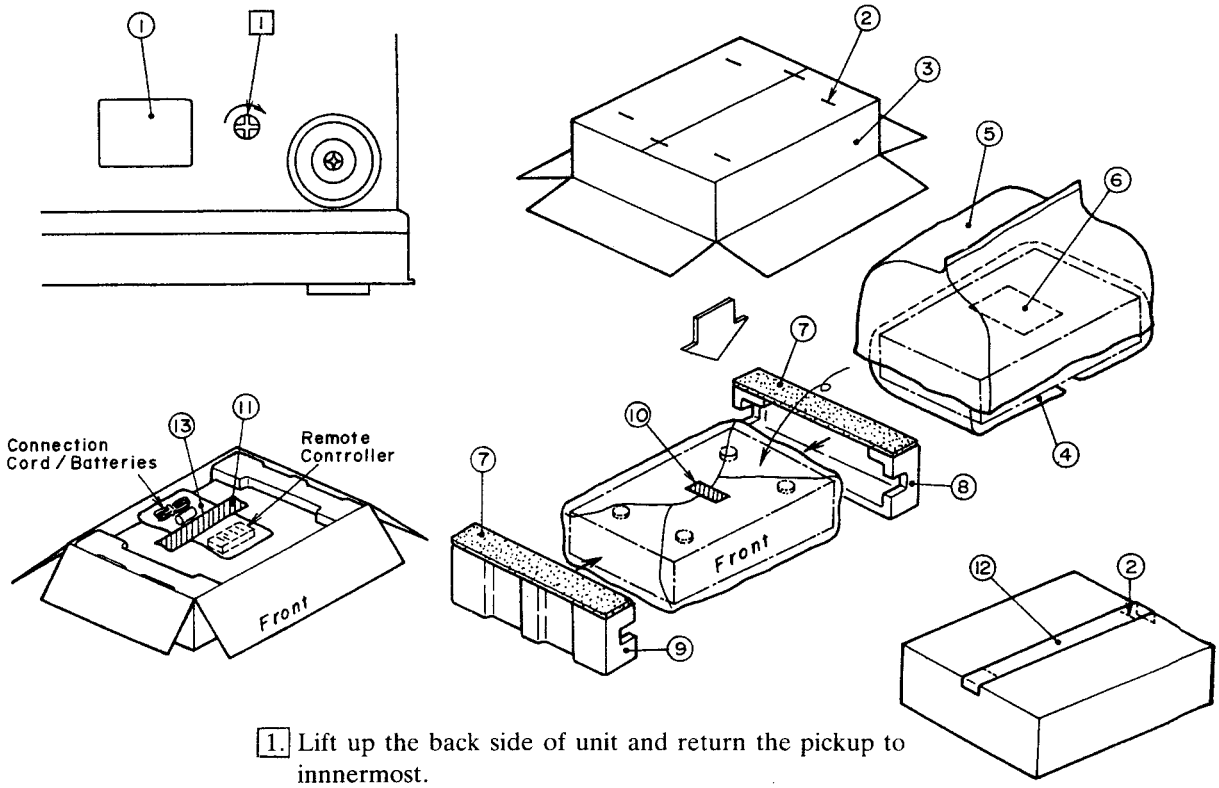


Disconnection
To solder Ⓐ position and Ⓑ position on the terminal PC board before removing the optical pickup.

Connection
The optical pick-up of service part has a protective solder bridge for Ⓐ position. That must be removed after connecting the pickup. Then, remove a protective solder bridge for Ⓑ position.

Fig. 11

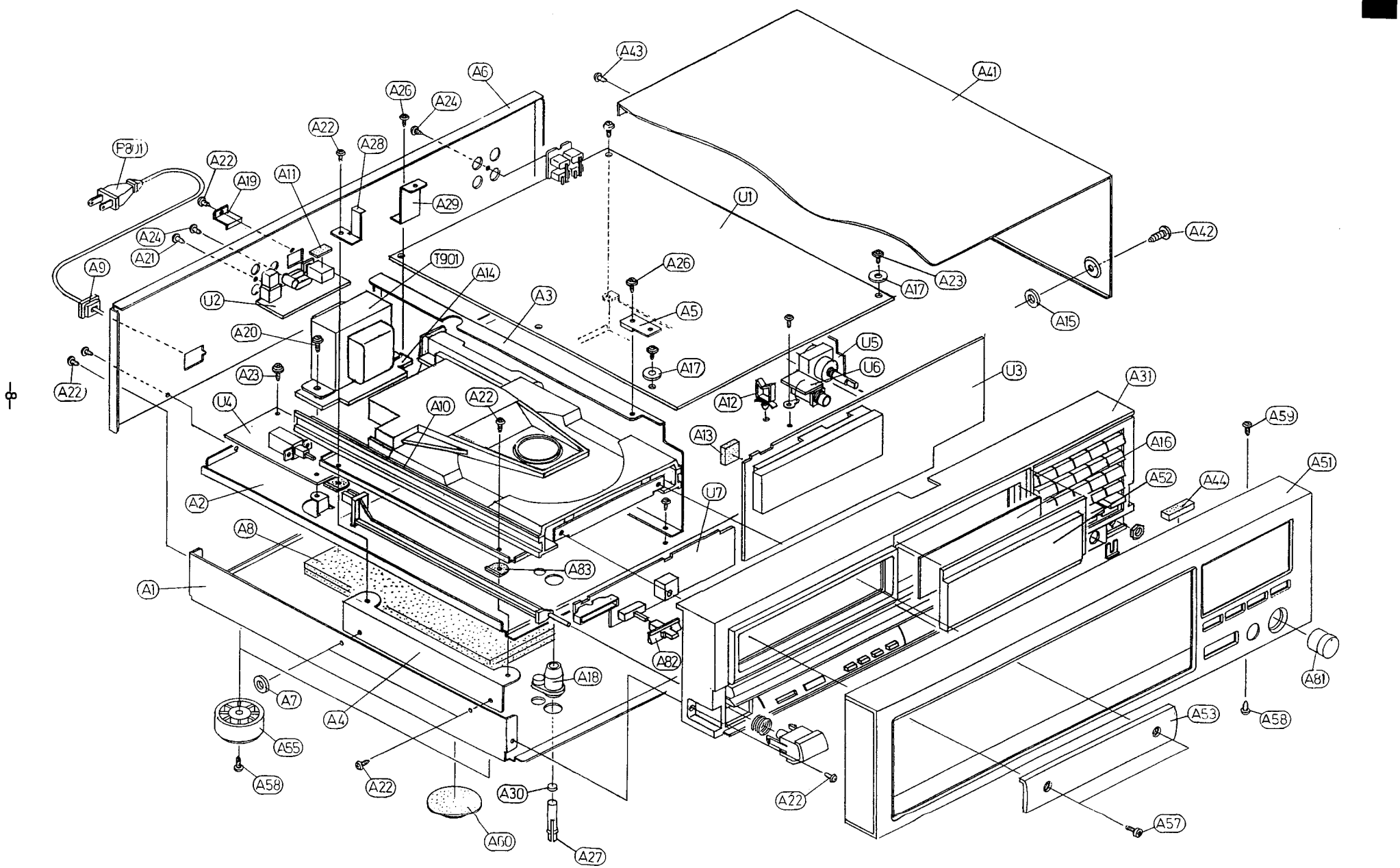
PACKING VIEW



1. Lift up the back side of unit and return the pickup to innnermost.
   Use a screwdriver to turn the lock lever (about 90°) in the round hole in the direction of arrow. (Clockwise)

REF. NO.	PART NO.	DESCRIPTION
1	29361123	Label
2	282301	Sealing hook
3	29051749	Master carton box 〈Black〉
	29051750	Master carton box 〈Silver〉
4	29095012-1	500×800mm, Protection sheet
5	29100105	550×680mm, Poly-vinyl bag
6	29361047	Label, sheet
7	29095572	Sheet
8	29091264	Pad L
9	29091265	Pad R
10	261504	Adhesive tape
11	29110071	Damplon tape
12	260012	Damplon tape
13		Accesarry bag ass'y
	29341302	Instruction manual
	2010097	Connection cord
	24140028	RC-122C, Remote controller
	3010054	UM-3, Two batteries
	2010169	Cord RI
	29365020	Warranty card
	29100094A	Poly bag for warranty card
	29100097	Poly-vinyl bag
	29091309	Pad, tray panel

CHASSIS-EXPLODED VIEW



PARTS LIST

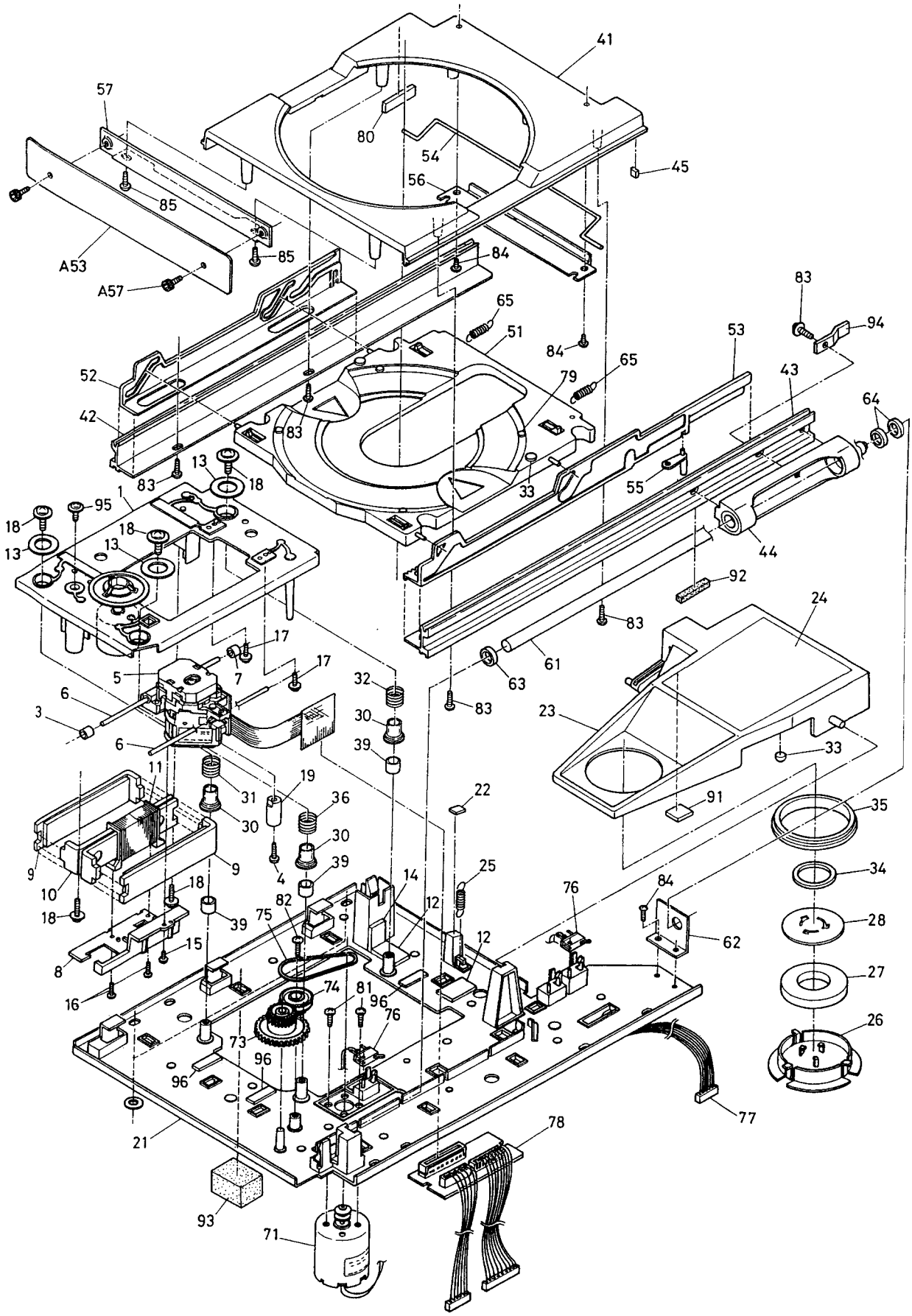
REF. NO.	PART NO.	DESCRIPTION
A1	27100170A	Chassis
A2	27100169A	Chassis U
A3	27130542	Bracket C
A4	27130543B	Bracket L
A5	27141311	Bracket T
A6	27121165	Back panel
A7	27175011C	Leg (Cushion)
A8	28140873	Cushion
A9	27300750	⚠ Strainrelief
A10	27273101A	Joint, power
A11	27270278	Spacer
A12	27300833	WS-2NS, Clamper
A13	28140903	Cushion
A14	27270214A	Spacer
A15	27270212	Spacer
A16	28133202	Back plate
A17	870060	W3×15, Flat washer
A18	27267558-1	Guide
A19	27141281	Bracket
A20	830440109	4TTC+10C (BH), Tapping screw
A21	834430108	3TTS+10B (BC), Tapping screw
A22	834430088	3TTS+8B (BC), Tapping screw
A23	831130088	3TTW+8B, Tapping screw
A24	834230108	3TTS+10B (Ni), Nickel screw
A25	834430068	3TTS+6B (BC), Tapping screw
A26	838440089	4TTB+8C (BC), Tapping screw
A27	27301184	Lock pin
A28	27141310	Bracket, rail
A29	27141309	Bracket
A30	28140918	Cushion
A31	27110433	Front bracket ass'y ⟨B⟩
	27110434	Front bracket ass'y ⟨S⟩
A41	28184401	Top cover ⟨B⟩
A41	28184402	Top cover ⟨S⟩
A42	838440089	4TTB+8C (BC), Tapping screw
A43	834430088	3TTS+8B (BC), Tapping screw
A44	28140408	t3×10×36, Cushion
A51	1H050121	Front panel ass'y ⟨B⟩
A51	1H049121	Front panel ass'y ⟨S⟩
A52	28191477	Clear plate
A53	27211045	Panel, door (Tray panel) ⟨B⟩
	27210988	Panel, door (Tray panel) ⟨S⟩
A55	27175153	Leg
A57	84643008	3HSB×8FN (BC), Special bolt ⟨B⟩
A57	84633008	3HSB×8FN (Cr), Special bolt ⟨S⟩
A58	834430088	3TTS+8B (BC), Tapping screw
A59	833430080	3TTP+8P (BC), Tapping screw

REF. NO.	PART NO.	DESCRIPTION
A60	27270255	Spacer
A81	28323433	Knob ⟨B⟩
	28323434	Knob ⟨S⟩
A82	28323152	Knob MODE ⟨B⟩
	28323435	Knob MODE ⟨S⟩
A83	27301187	Cushion L
P801	253148 or	⚠ AS-CEE 250V 2.5A,
	253150	Power supply cord
T901	2300342	⚠ NPT-1004G, Power transformer
U1	1H048563-1A	NAAR-3363-1A, Main circuit pc board ass'y
U2	1H048564-1	NADG-3364-1, Opto./digital output pc board ass'y
U3	1H048565-1	NADIS-3365-1, Display circuit pc board ass'y
U4	1H048566-1	NAPS-3366-1, Power switch pc board ass'y
U5	1H048567-1	NAAF-3367-1, Headphone amplifier pc board ass'y
U6	1H048568-1	NAAF-3368-1, Headphone terminal pc board ass'y
U7	1H048569-1	NASW-3369-1, Switch pc board ass'y
W1	260208	Binder

NOTE: ⟨B⟩: Only Black model
⟨S⟩: Only Silver model

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MECHANISM-EXPLODED VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	1H048901	Spindle motor ass'y
3	27270264-1	Spacer
4	82542010	2B+10F(BC), Binding screw
5	24110003	DLBA2Z2001A, Optical pickup
6	27260286	Shaft
7	27270264-1	Spacer
8	27301129B	Plate
9	28181020	Magnet ass'y
10	27301152	York ass'y
11	24502236A	Coil
12	28140912	Cushion A
13	28140913	Cushion B
14	28140914	Cushion C
15	82542006	2B+6F(BC), Binding screw
16	833420068	2TTP+6B(BC), Tapping screw
17	831430100	3TTW+10P(BC), Tapping screw
18	801414	Special screw
19	27301179	Weight PU
21	27100166C	Chassis L
22	28140891	Cushion A
23	27301131B	Arm
24	29360911	Label LASER 3
25	27180402	Spring
26	27301132A	Cap CH
27	28181019A	Magnet CH
28	27301133	York CH
30	27301134	Cushion rubber
31	27180403A	Spring F
32	27180404B	Spring R
33	28140860	Cushion
34	27270277	Spacer
35	27301172	Cushion rubber
36	28180417	Spring G
37	27301182	Cushion L
39	28140917	Tube
41	27301124	Disc tray
42	27301135	Rail L
43	27301136	Rail R
44	27301126	Guide bearing
45	28140892	Cushion T
51	27301137B	Disc plate
52	27301138	Cam plate L
53	27301139A	Cam plate R
54	27260280A	Shaft
55	27301140A	Stopper
56	27301141A	Plate
57	27141275	Bracket
61	27260281A	Shaft
62	27141274	Bracket
63	27270265A	Spacer
64	27270276	Spacer
65	27180418	Spring
71	1H048902	Disc motor ass'y
73	27301142	Pulley gear
74	27301143A	Flat wheel
75	27301162	Rubber belt
76	25065322	NMS-1214, Microswitch
77	2000888	Socket ass'y
78	1H048559-1	NAETC-3359-1, Terminal pc board ass'y
79	27301180	Cushion
81	82143004	3P+4FN(BC), Pan head screw
82	831126060	2.6TTW+6P, Tapping screw
83	838430088	3TTB+8B(BC), Tapping screw
84	834430068	3TTS+6B(BC), Tapping screw
85	834430088	3TTS+8B(BC), Tapping screw
91	28140908	Cushion K
92	28140909	Cushion L
93	28140910	Cushion F
94	27141317	Bracket, switch
95	834440168	4TTS+16B(BC), Tapping screw
96	28140911	Cushion P

DISASSEMBLING PROCEDURES

Top cover

Remove a screw holding the back panel and top cover.
Remove the four screws holding the top cover and chassis.

Main circuit PC board

Remove the top cover.
Remove the eight screws holding the back panel and chassis.
Remove a screw holding the bracket C and opto./digital output PC board.
Remove four screws holding the main PC board and chassis.

Tray panel

Use a hexagon wrench (2.5mm), remove the two hexagon bolt holding the tray panel and mechanical chassis.

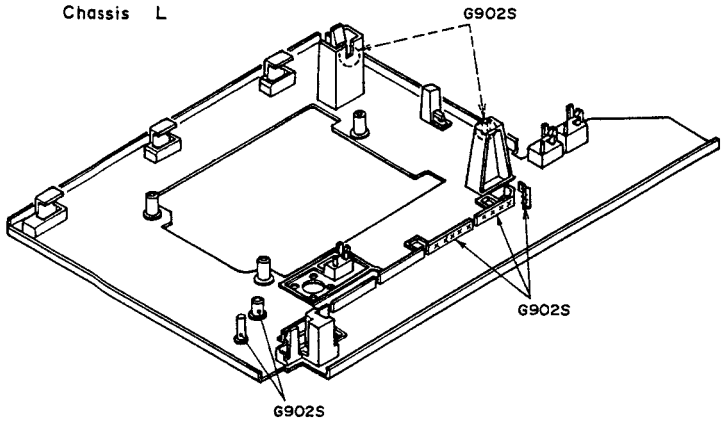
Mechanism ass'y

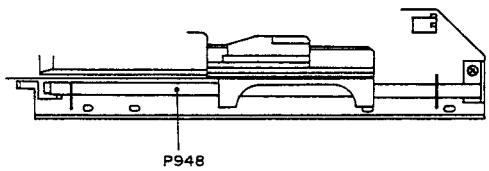
Remove the tray panel.
Remove the four screws holding the mechanism and chassis.

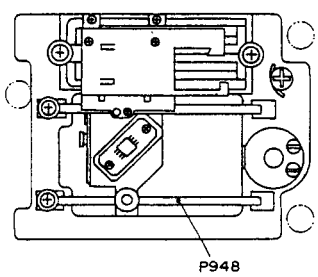
Caution: When disconnect the sockets P101 and P102 on the main circuit PC board, solder the B point on the terminal PC board or the A point on the pickup. (Refer page 6) After remove the flexible PC board of pickup from terminal PC board, remove the terminal PC board.

LUBRICATION

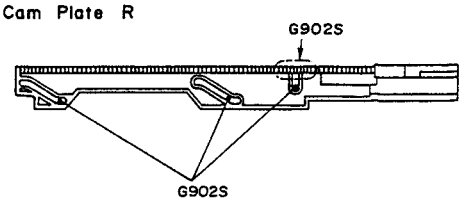
Chassis L



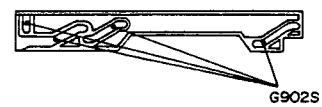




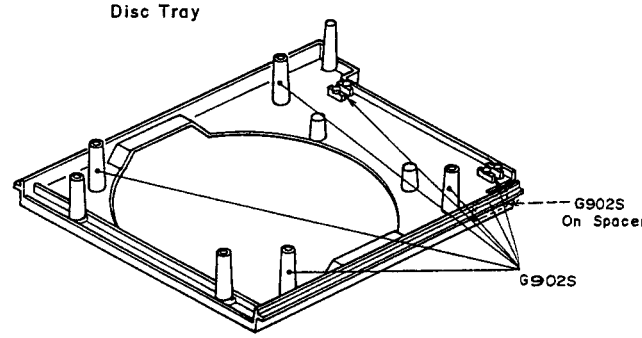
Cam Plate R



Cam Plate L

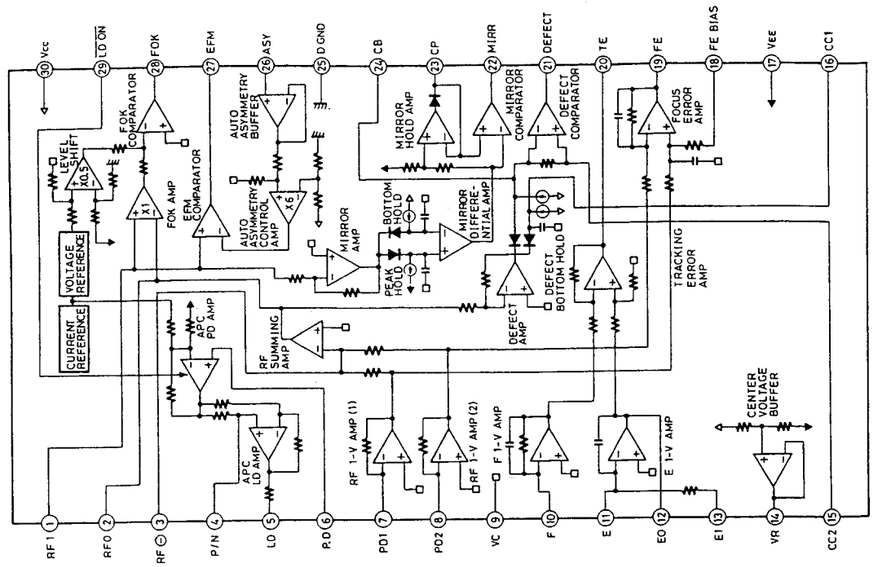


Disc Tray



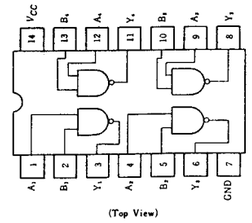
IC BLOCK DIAGRAM AND DESCRIPTIONS

CXA1081S (RF Amp)

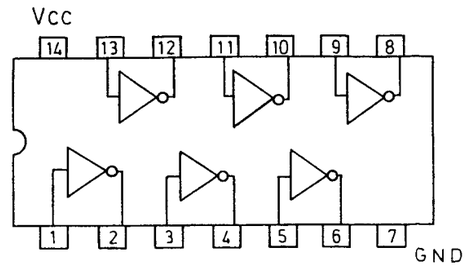


Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	RF I	Input terminal of output signal of RF summing amplifier via the coupling capacitor	16	CC1	Defect bottom hold output terminal
2	RFO	Output terminal of RF summing amplifier	17	V_{EE}	Negative power supply terminal
3	RF–	Input terminal of RF summing amplifier feedback	18	FE BIAS	Non-inversion bias terminal of focus error amplifier CMR adjustment of focus error amplifier
4	P/N	Switching terminal of P-SUB/N-SUB of LD (laser diode)	19	FE	Output terminal of focus error amplifier
5	LD	Output terminal of APC LD amplifier	20	TE	Output terminal of tracking error amplifier
6	PD	Input terminal of APC PD (Pin diode) amplifier	21	DEFECT	Output terminal of defect comparator
7	PD1	Inversion input terminal of RF I-V amplifier (1) Connect to A+C of PIN diodes.	22	MIRR	Output terminal of mirror comparator
8	PD2	Inversion input terminal of RF I-V amplifier (2) Connect to B+D of PIN diodes.	23	CP	Connection terminal of capacitor for mirror hold Non-inversion input of mirror comparator
9	VC	Connect to GND.	24	CB	Connection terminal of capacitor for defect bottom hold
10	F	Inversion input terminal of F I-V amplifier Connect to F of PIN diode.	25	DGND	Connect to GND
11	E	Inversion input terminal of E I-V amplifier Connect to E of PIN diode.	26	ASY	Auto asymmetry control input terminal
12	E0	Output terminal of E I-V amplifier	27	EFM	Output terminal of EFM comparator
13	E1	Feedback input terminal of E I-V amplifier Gain adjustment of E I-V amplifier	28	FOK	Output terminal of FOK comparator
14	VR	DC voltage output terminal of (Vcc + V_{EE})/2	29	$\overline{\text{LD ON}}$	ON/OFF switching terminal of laser diode
15	CC2	Input terminal from defect bottom hold output signal via the coupling capacitor	30	Vcc	Positive power supply

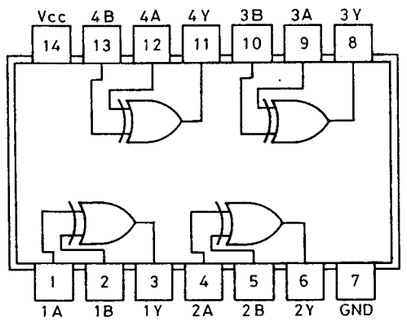
74HC00P (NAND gate)



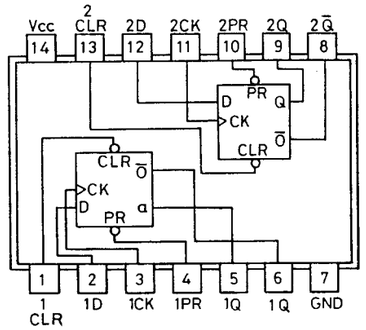
74HCU04P (Hex inverters)



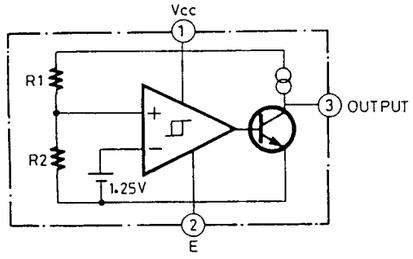
74HC86P (Exclusive OR)



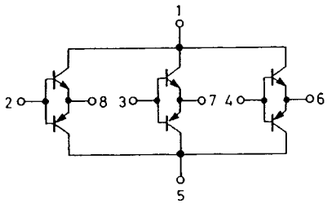
74HC74P (D-flip flop with preset)



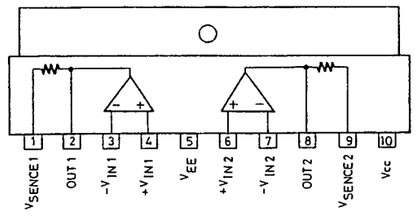
M51943ASL (System reset)



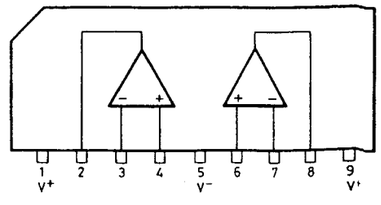
STA341M-L (Transistor array)



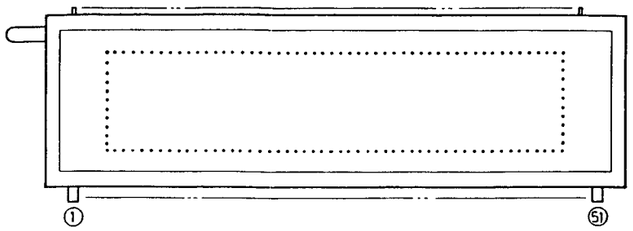
LA6510 (Power operation amp.)

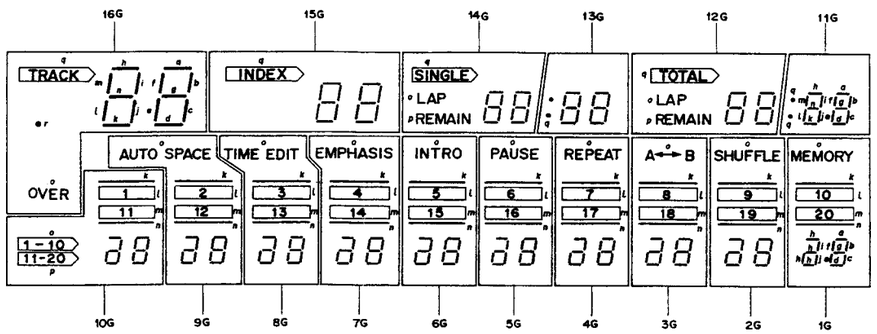


NJM4556S (Operation amp.)



16BT-09GK (Fluorescent tube)



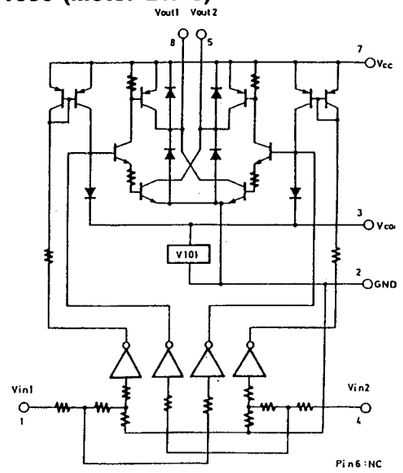


Pin connection

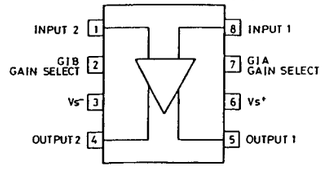
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CONNECTION	F1	F1	NP	NP	NP	r	q	o	a	b	f	g	c	e	d	p	h	i	m	n	j	ℓ	k	16G	15G	14G

PIN NO.	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	
CONNECTION	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	F2	F2	

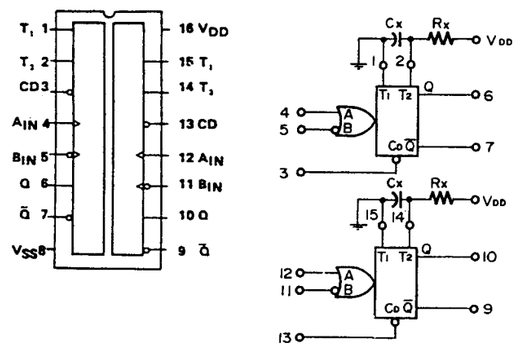
LB1630 (Motor Drive)



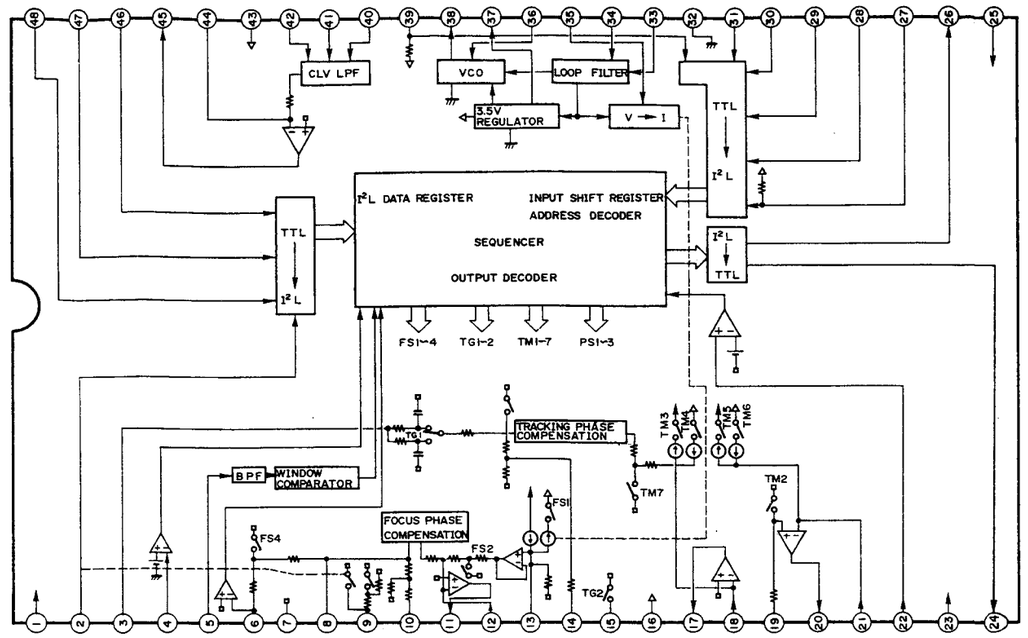
NJM592D8 (Wide band amp.)



HD14538BP (Multivibrator)



CXA1082AQ (Servo Signal Processor)

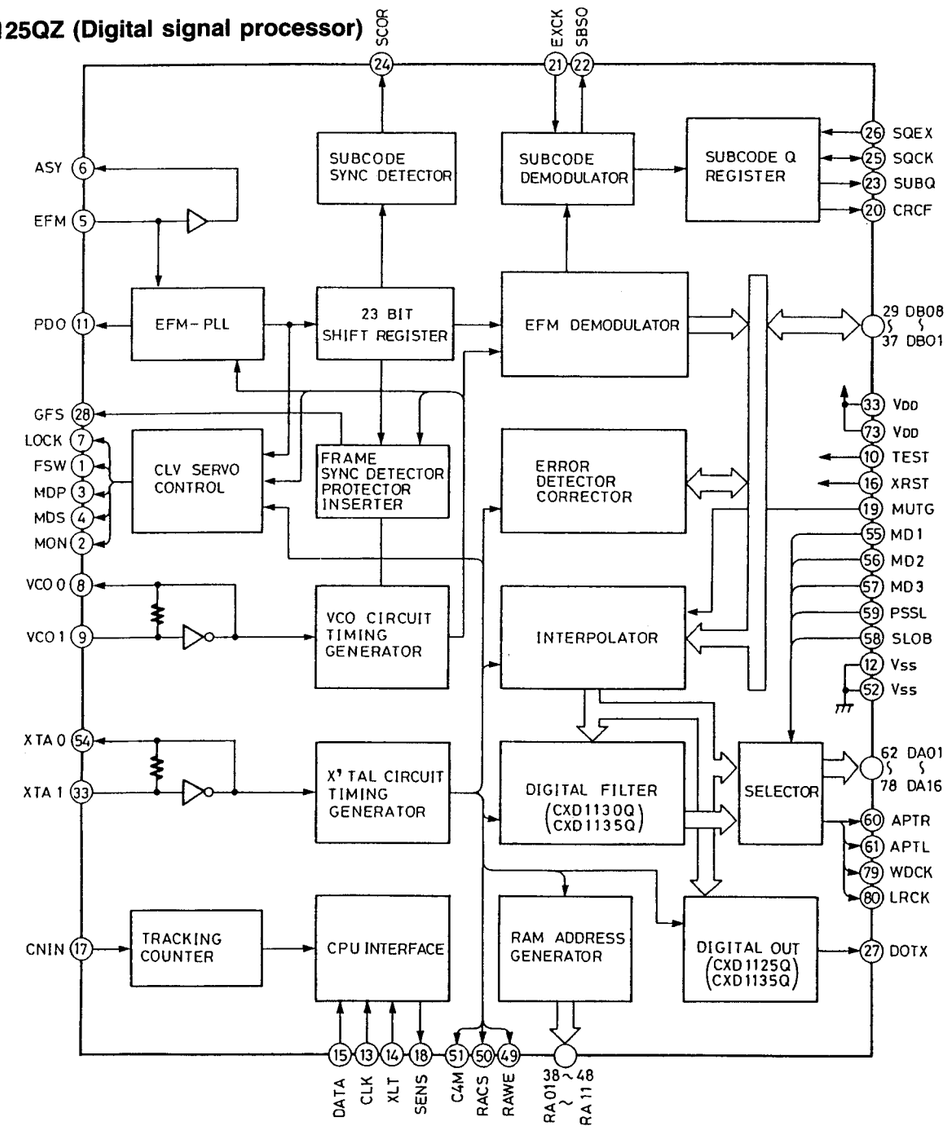


Pin No.	Symbol	Function	Pin No.	Symbol	Function
2	DECT	Defect signal input terminal.	15	TG2	Time constant terminal for high frequency gain switching of tracking.
3	TE	Tracking error signal input terminal.	17	TAO	Tracking drive output terminal.
4	TZC	Tracking zero cross comparator input terminal.	18	TA−	Inversion input terminal of tracking amplifier.
5	ATSC	Window comparator input terminal for ATSC detection.	19	SL+	Non-inversion input terminal of sled amplifier.
6	FE	Focus error singal input terminal.	20	SLO	Sled drive output terminal.
8	FGD	Insert the capacitor between this terminal and pin 9 when drop the high frequency gain of focus servo.	21	SL−	Inversion input terminal of sled amplifier.
			22	SSTOP	Limit switch ON/OFF detector signal terminal for disc innermost position detector.
9	FS3	Switching terminal of high frequency gain of focus servo.	23	FSET	Terminal for peak of phase compensation of tracking and f_0 setting LPF.
10	FLB	Time constant switching terminal when raise the low frequency gain of focus servo.	24	SENS	FZC, AS, TZC, SSTOP and etc. signals are output by the command from microprocessor.
11	FEO	Focus drive output terminal.	26	C. OUT	Signal output terminal for count of track numbers.
12	FE−	Inversion input terminal of focus amplifier.	27	DIRC	Use when jumps one track.
13	SRCH	Time constant terminal to make the fous search waveform.	28	XRST	Reset input terminal. Reset at the low level.
14	TGU	Time constant terminal for high frequency gain switching of tracking.			

Pin No.	Symbol	Function
29	DATA	Serial data input terminal from microprocessor.
30	XLT	Latch input terminal from microprocessor.
31	CLK	Clock input terminal serial data transmitter from microprocessor.
33	BW	Time constant terminal of loop filter.
34	PDI	Input terminal of phase comparator output PDO.
35	ISET	Flow the current to decide the focus search, track jump, and kick height.
36	VCOF	VCO free run frequency is proportion to resistor value between pins 31 and 37.
38	C864	VCO (8.64MHz) output terminal.
39	LOCK	Sled motor run away prevention circuit is operated at low level.

Pin No.	Symbol	Function
40	MDP	Connection terminal to terminal MDP of CXD1125QZ.
41	MON	Connection terminal to terminal MON of CXD1125QZ.
42	FSW	LPF time constant terminal of CLV servo error signal.
44	SPDL−	Inversion input terminal of spindle drive amplifier.
45	SPDLO	Spindle drive output terminal.
46	WDCK	Clock input terminal. (88.2kHz)
47	FOK	Focus OK input terminal.
48	MIRR	Mirror signal input terminal.

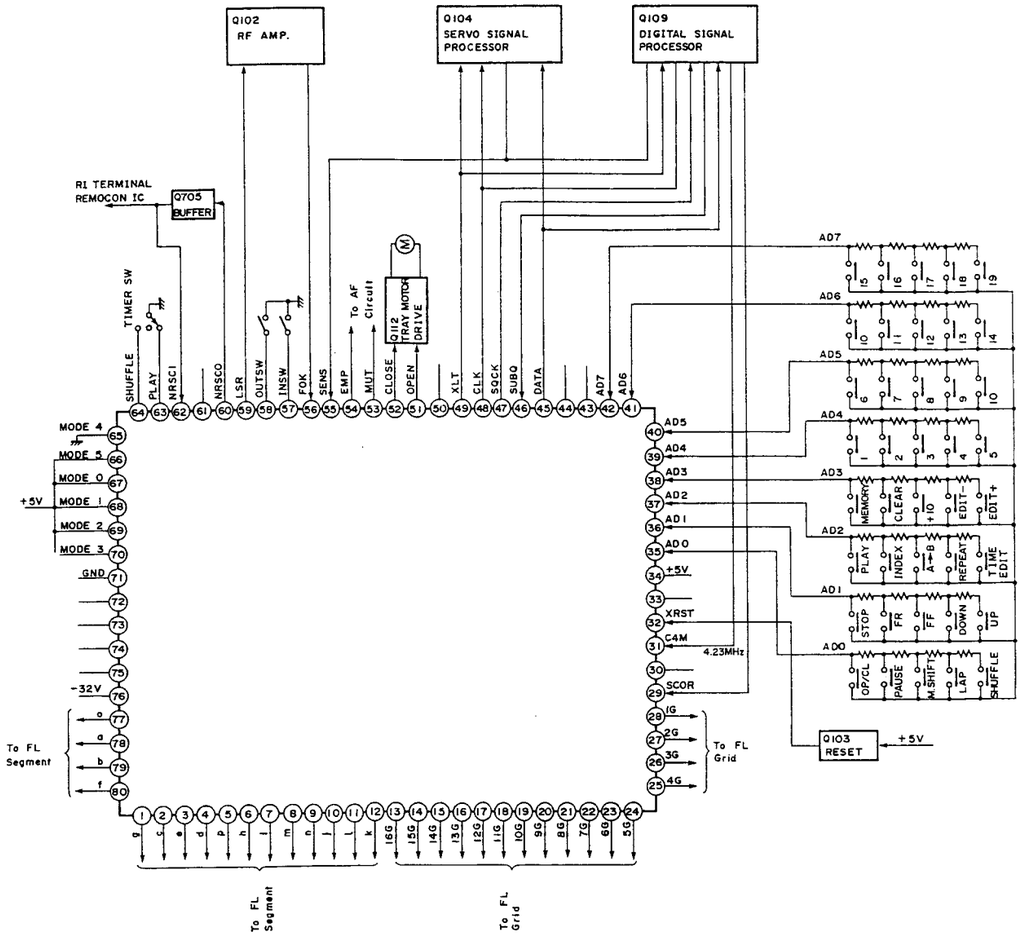
CXD1125QZ (Digital signal processor)



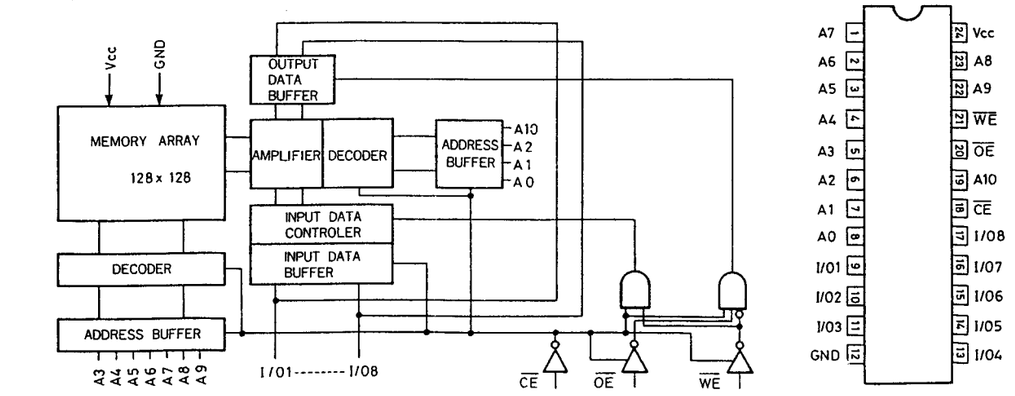
Pin No.	Symbol	Function
1	FSW	Time constant switching output terminal of output filter of spindle motor
2	MON	ON/OFF control output terminal of spindle motor
3	MDP	Drive output terminal of spindle motor. Rough control when mode CLV-S and phase control when mode CLV-P
4	MDS	Drive output terminal of spindle motor. Speed control when mode CLV-P
5	EFM	EFM signal input terminal from RF amplifier
6	ASY	Output terminal to control the slice level of EFM signal
7	LOCK	GFS sampling terminal
8	VCOO	VCO output terminal. 8.6436MHz when lock to EFM signal
9	VCOI	VCO input terminal
10	TEST	0V
11	PDO	Phase comparator output terminal of EFM signal and VCO/2
12	Vss	Ground
13	CLK	Serial data transmitter clock input terminal from microcomputer
14	XLT	Latch input terminal from microcomputer
15	DATA	Serial data input terminal from microcomputer
16	XRST	System rest input terminal. Reset at low level.
17	CNIN	Tracking pulse input terminal
18	SENS	Inner condition output terminal correspond to address
19	MUTG	Muting input terminal
20	CRCF	CRC check output terminal of subcode Q
21	EXCK	Clock input terminal for serial output of subcode
22	SBSO	Serial output terminal of subcode
23	SUBQ	Subcode Q output terminal
24	SCOR	Subcode sink S0 + S1 output terminal
25	SQCK	Clock terminal to read the subcode Q
26	SQEX	Selector input terminal of SQCK
27	DOTX	Digital output terminal
28	GFS	Indicator output of lock condition of frame sync
29 ~ 32	DB08 ~ DB05	Data terminals of external RAM
33	VDD	+5V
34 ~ 37	DB04 ~ DB01	Data terminals of external RAM
38 ~ 48	RA01 ~ RA11	Address output terminals of external RAM

Pin No.	Symbol	Function
49	RAWE	Write enable signal output to external RAM
50	RACS	Chip selector signal output to external RAM
51	C4M	Divider output of crystal. f=4.2336MHz
52	Vss	Ground
53	XTAI	Input terminal of crystal oscillator
54	XTAO	Output terminal of crystal oscillator
55 ~ 57	MD1 ~ MD3	Mode switching input terminals
58	SLOB	Code switching input of audio data output.
59	PSSL	Mode switching input of audio data output. Serial output at low level. Parallel output at high level
60	APTR	Control output for aperture correction. High level when Rch.
61	APTL	Control output for aperture correction. High level when Lch.
62	DA01	DA01 (LSB of parallel sound output) output when PSSL = H. C1F1 output when PSSL = L
63	DA02	DA02 output when PSSL = H. C1F2 output when PSSL = L.
64	DA03	DA03 output when PSSL = H. C2F1 output when PSSL = L.
65	DA04	DA04 output when PSSL = H. C2F2 output when PSSL = L.
66	DA05	DA05 output when PSSL = H. C2FL output when PSSL = L.
67	DA06	DA06 output when PSSL = H. C2PO output when PSSL = L.
68	DA07	DA07 output when PSSL = H. RFCK output when PSSL = L.
69	DA08	DA08 output when PSSL = H. WFCK output when PSSL = L.
70	DA09	DA09 output when PSSL = H. PLCK output when PSSL = L.
71	DA10	DA10 output when PSSL = H. UGFS output when PSSL = L.
72	DA11	DA11 output when PSSL = H. GTOP output when PSSL = L.
73	VDD	Power supply (5V)
74	DA12	DA12 output when PSSL = H. RAOV output when PSSL = L.
75	DA13	DA13 output when PSSL = H. C4LR output when PSSL = L.
76	DA14	DA14 output when PSSL = H. C210 output when PSSL = L.
77	DA15	DA15 output when PSSL = H. C210 output when PSSL = L.
78	DA16	DA16 (MSB of parallel sound output) output when PSSL = H. DATA output when PSSL = L
79	WDCK	Strobe signal output. 176.4kHz when DF is on. 88.2kHz when DF is off.
80	LRCK	Strobe signal output. 88.2kHz when DF is on. 44.1kHz when DF is off.

CXP5058H-104QZ (Microprocessor)



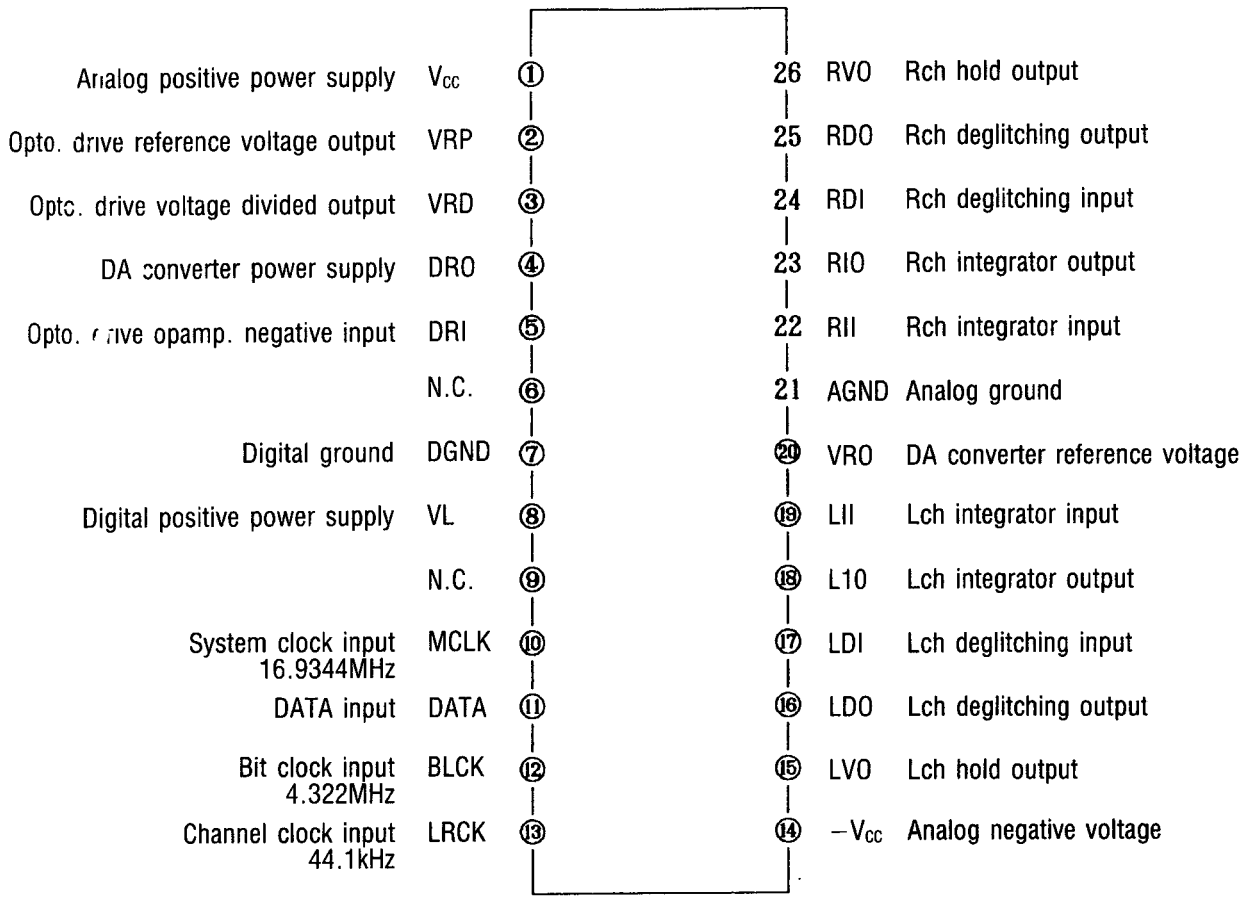
CKX5816SPS-15L/LC3517AS-15 (Static RAM)



Pin No.	Symbol	I/O	Descriptions
1~12	g, c, e, d, p, h i, m, n, j, l, k	O	Fluorescent indicator tube segment output terminals. Active high.
13~28	16G~1G	O	Fluorescent indicator tube grid output terminals. Active high.
29	SCOR	I	Sub code sink input terminal. Leading pulse (75Hz) is input during play.
31	C4M	I	Reference clock input terminal. f=4.23MHz
32	RST	I/O	Reset input terminal. Reset at low level when the power switch turns on.
34	VDD		+5V power supply.
35~42	AD0~AD7	I	A/D converter input terminals for key input.
44	SC	O	Servo system serial command clock (CLK) and sub code Q read clock (SQCK) output terminal.
45	DATA	O	Data output terminal of serial command of servo system.
46	SUBQ	I	Input terminal of sub code Q.
47	SQCK	O	Read clock output control terminal of sub code Q.
48	CLK	O	Clock output control terminal of serial command of servo system.
49	XLT	O	Latch command output terminal of serial command of servo system.
50	PLAY	O	Play indicator output terminal. Not used.
51	OPEN	O	Tray open operation output terminal. Open at low level.
52	CLOSE	O	Tray close operation output terminal. Close at low level.
53	MUT	O	Audio muting control output terminal. Muting turns off at low level.
54	EMP	O	Emphasis switch control output terminal. Active high.
55	SENSE	I	This terminal is input the conditions of servo system according serial command of servo system.
56	FOK	I	Focus OK input terminal. This terminal is the high level when focus servo operates.
57	IN SW	I	Close switch input terminal. L when the close switch turns on.
58	OUT SW	I	Open switch inut terminal. L when the open switch turns on.
59	LSR	O	Laser diode ON/OFF control output terminal. ON at low level.
60	NRSC OUT	O	System code output terminal.
62	NRSC IN	I	System code input terminal.
63	TIMER PLAY	I	Timer play swich input terminal. Time play at low level.
64	TIMER SHUFFLE	I	Timer shuffle switch input terminal. Timer shuffle at low level.
65~70	MODE 4, 5, 0, 1, 2, 3	I	Mode input terminals.
71	V_{SS}		Connect to GND.
76	VEDP		Power supply terminal for fluorescent indicator tube. (−30V)
77~80	o, a, b, f	O	Fluorescent indicator tube segment output terminals. Active high.

	MODE 0 SREC SELECTOR	MODE 1 PICKUP SELECTOR	MODE 2 NRSC SELECTOR	MODE 3 KICK SELECTOR	MODE 4 TRAY SELECTOR
HIGH (+5V)	1 sec wait	ALPS	ONLY (DCHG, OSTP)	Max 128 tracks	Speed down
LOW (GND)	0.5 sec wait	SONY	INVOLVES (SREC, ASPC)	Max 256 tracks	Speed const.

8D-3170-1 (DAC unit)



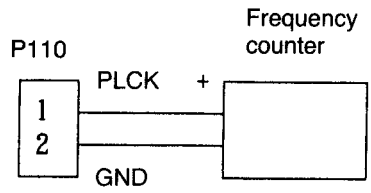
ADJUSTMENT PROCEDURES

Instruments required

Dual trace oscilloscope, Frequency counter, AF oscillator, Test disc (SONY YEDS-18), AC voltmeter, Jitter meter, and Socket P4(Part no. 25050138)

1. VCO frequency adjustment

Connect the frequency counter to terminal P110.
Turn the power switch to ON.(No load the disc.)
Adjust R147 until the frequency counter reading becomes 4322 ±5kHz.
After adjustment, disconnect the frequency counter.



2. Focus offset adjustment

Load the test disc YEDS-18 on the tray and play the track 2.
Connect the oscilloscope or jitter meter to terminal P109.
(Oscilloscope)
Adjust R110 until a clear trace of waveform pattern as shown photo 1 appear on the oscilloscope.
When the amount of jitter is broad, set R110 to mechanical center.
(Jitter meter)
Adjust R110 until the jitter meter reading becomes minimum.(Less than 10ns.)
After adjustment, disconnect the oscilloscope or jittter meter.

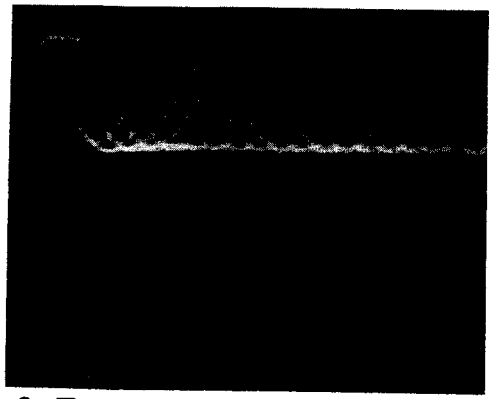
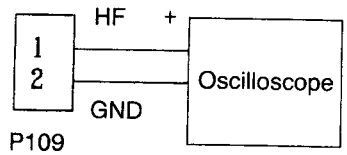
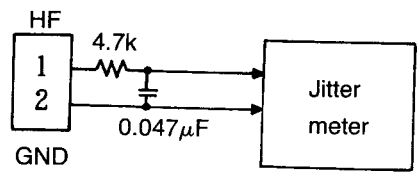


Photo 1



Oscilloscope range
Vertical : 0.5V/div.
Holizontal : 0.2 μs/div.
DC, Ground: Center



3. Tracking offset adjustment

Connect the short clip between TP105 and Ground of digital section.
Turn R125 to minimum position.(Counter clockwise)
Connect the oscilloscope between pin 3 (TR) of P108 and pin 2 (GND) of P109.
Adjust R108 until the center of tracking error signal on the oscilloscope becomes GND level.
Turn R125 to the mechanical center.
After adjustment, disconnect the oscilloscope and short clip.

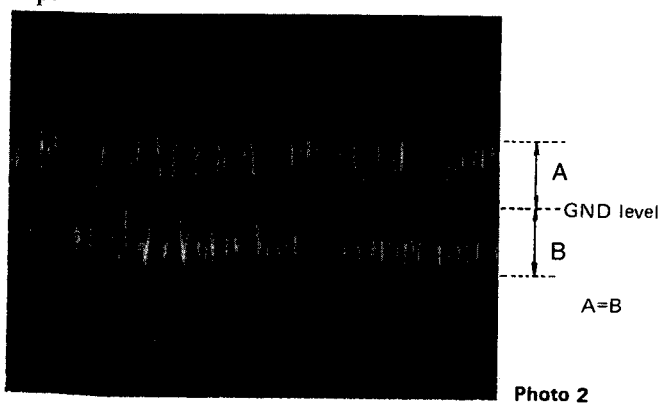
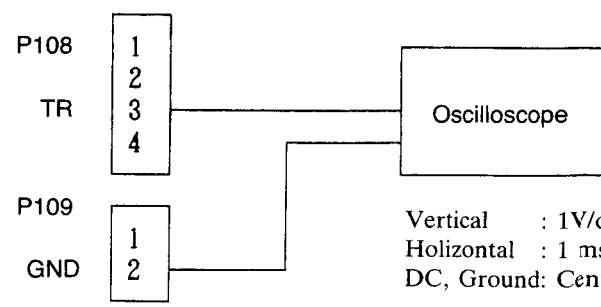


Photo 2



Vertical : 1V/div.
Holizontal : 1 ms/div.
DC, Ground: Center

4. Focus gain adjustment

Set the output of AF oscillator to 800Hz, 1~1.5Vp-p.
Play the track 2 of test disc.
Connect the oscilloscope and the AF oscillator as shown below.

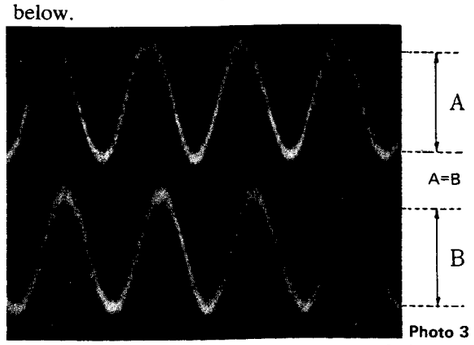
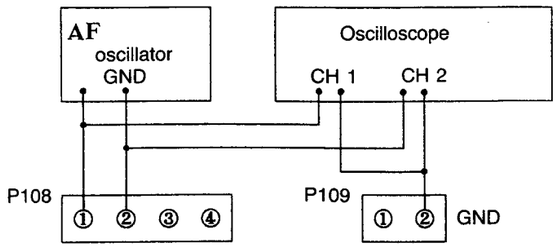


Photo 3



Vertical : 0.5V/div.
Holizontal: 0.5 ms/div.

Adjust R122 until 800Hz components of channels 1 and 2 on oscilloscope become same level.
After adjustment, disconnect the AF oscillator and the oscilloscope.

5. Tracking gain adjustment

Set the output of AF oscillator to 1.2kHz, 1~1.5Vp-p.
Play the track 2 of test disc.
Connect the oscilloscope and the AF oscillator as shown below.

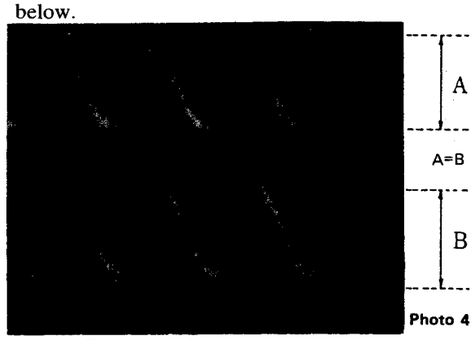
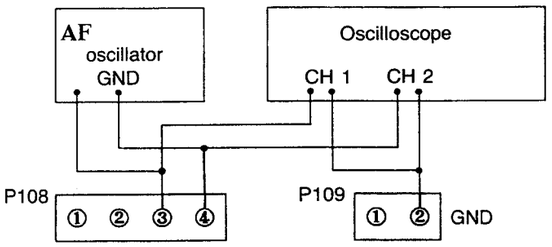


Photo 4



Vertical : 0.5V/div.
Holizontal: 0.2 ms/div.

Adjust R125 until 1.2kHz components of channels 1 and 2 on oscilloscope become same level.
After adjustment, disconnect the AF oscillator and the oscilloscope.

6. Opto. transmitter system adjustment

Connect the oscilloscope to test point TP401.
Play the track 2 of test disc.
Adjust R178 until the cross point of data waveform as shown photo 5 becomes on the top side.

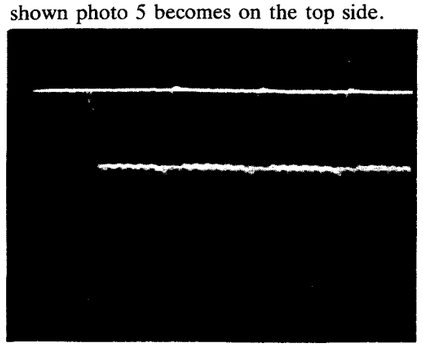
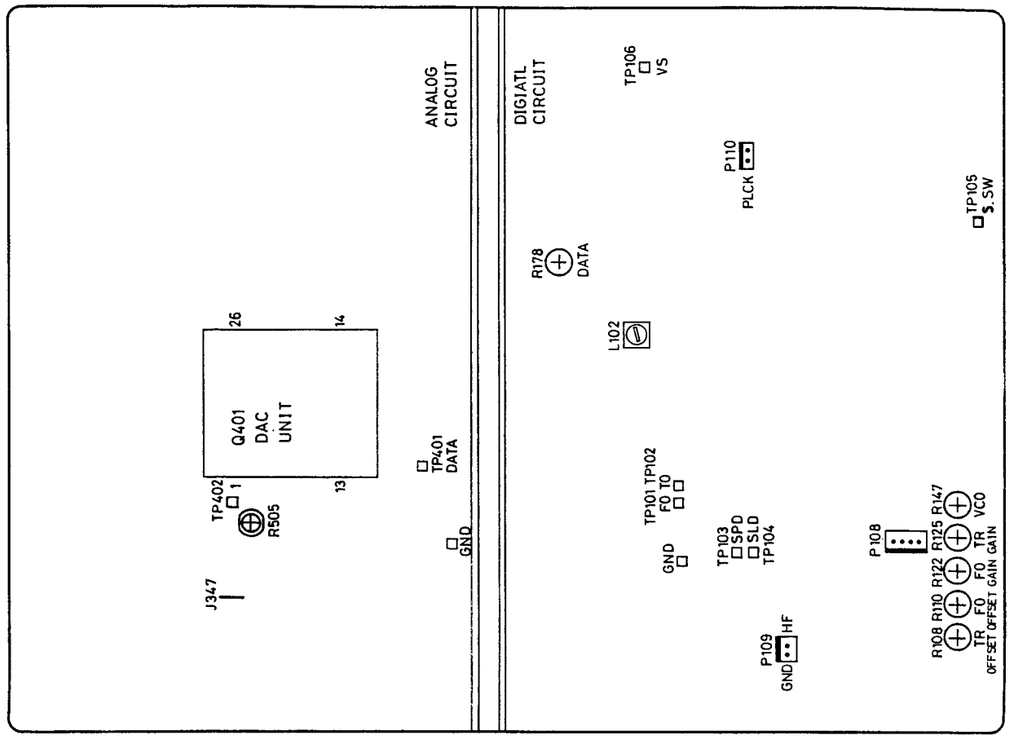


Photo 5

Vertical : 2V/div.
Holizontal : 0.2 μs/div.
DC, Ground: Center

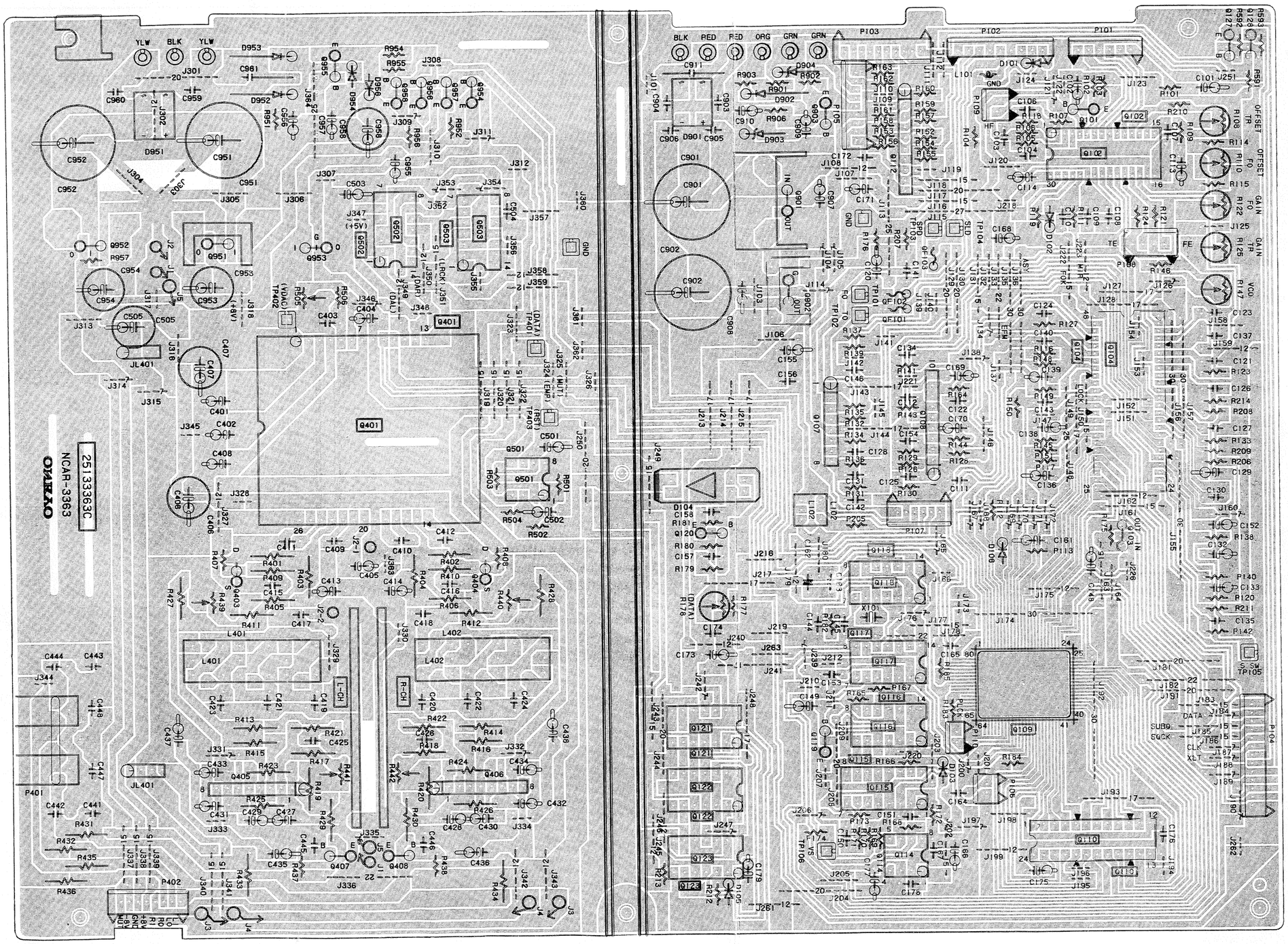


Adjustment point

7. DAC power supply voltage adjustment

Connect the DC voltmeters to J347 and TP402.
(Connect the DC voltmeter to the leg of semi-fixed resistor when TP402 is not on the pc board.)
(Refer adjustment point)
Adjust R505 until the voltage discrepancy between TP402 and J347 is 0.1V.(TP402>J347)

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



MAIN CIRCUIT PC BOARD

PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-3363-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q102	22240180	CXA1081S
Q103	22240018	M51943ASL
Q104	22240181	CXA1082AS
Q107	22240168	STA341M-L
Q108	22240034	LA6510
Q109	22240129	CXD1125QZ
Q110	22240178 or	CXK5816SPS-15L or
	22240118	LC3517AS-15
Q112	22240034	LA6510
Q114	222956	NJM2068DD
Q115	222850381	HD14538BP
Q116	222740745	74HC74P
Q117	222740865	74HC86P
Q118	222755	74HCU04P
Q121, Q122	222740745	74HC74P
Q123	222740005	74HC00P
Q401	222076A	8D-3170-1(DAC unit)
Q405, Q406	222652	M5218L
Q501	22240035	NJM592D8
Q502	222740005	74HC00P
Q503	222740745	74HC74P
Q901	222780052	78M05
Q902	222790053	79L05
Q951	222780085MIT	M5F78M08L
Q952	222790085MIT	M5F79M08L
Q953	222780053	78L05
	Transistors	
Q101	2211503 or	2SA950-O or
	2211504	2SA950-Y
Q119, Q120	2211254 or	2SC1815-Y or
	2211255	2SC1815-GR
Q129	221281	DTC114YS
Q403, Q404	2212304 or	2SK381-D or
	2211945	2SK246-GR
Q407, Q408	2211705 or	2SD655-E or
	2211706	2SD655-F
Q903	2211503 or	2SA950-O or
	2211504	2SA950-Y
Q954	2213090	DTA114YS
Q956	2211454 or	2SA1015-Y or
	2211455	2SA1015-GR
Q957, Q958	221281	DTC114YS
	Diodes	
D101-D103	223163	1SS133
D105	223163	1SS133
D901	22380018 or	DB103 or
	223892	DF02M
D902, D952	223880 or	GP101N4003 or
D953	223896	1N4003F
D903	224652702 or	HZ27EB2 or
	224452702	MTZ27B
D904	224650511 or	HZ5.1EB1 or
	224450511	MTZ5.1A
D951	22380013	RDF02M
D954, D956	223163	1SS133
	Photo coupler	
D104	24120005 or	FCNE-S-001A or
	24120006	FCNE-S-001B
	X'tal	
X101	3010112	KD6586FFB
	Coils	
L101	231023	NCH-1062
L102	232136 or	NSRF-2046 or
	232143	NSRF-2047
L401, L402	232151	NMC-6076

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C101, C102	354721019	100μF, 6.3V, Elect.
C103, C107	371121034	0.01μF±5%, 50V , Mylar
C108	371124724	4700pF±5%, 50V , Mylar
C109	371121034	0.01μF±5%, 50V , Mylar
C110	371122224	2200pF±5%, 50V , Mylar
C111, C112	371121034	0.01μF±5%, 50V , Mylar
C113, C114	354721019	100μF, 6.3V, Elect.
C121	371122224	2200pF±5%, 50V , Mylar
C122	371121044	0.1μF±5%, 50V , Mylar
C123	371122234	0.022μF±5%, 50V , Mylar
C125-C127	371121044	0.1μF±5%, 50V , Mylar
C129	354741009	10μF, 16V, Elect.
C130	371123334	0.033μF±5%, 50V, Mylar
C132	354744709	47μF, 16V, Elect.
C133	354780339	3.3μF, 50V, Elect.
C135	371121034	0.01μF±5%, 50V, Mylar
C136	354780109	1μF, 50V, Elect.
C138	354744709	47μF, 16V, Elect.
C139	354782299	0.22μF, 50V, Elect.
C140, C180	371121034	0.01μF±5%, 50V, Mylar
C142	371121044	0.1μF±5%, 50V, Mylar
C146	354780229	2.2μF, 50V, Elect.
C148	354721019	100μF, 6.3V, Elect.
C149	354781099	0.1μF, 50V, Elect.
C150	371122234	0.022μF±5%, 50V, Mylar
C151	371122224	2200pF±5%, 50V, Mylar
C152, C155	354721019	100μF, 6.3V, Elect.
C162	352942206	22μF, 16V, Non-polar elect.
C166	354744709	47μF, 16V, Elect.
C168-C171	354744709	47μF, 16V, Elect.
C173, C175	354744709	47μF, 16V, Elect.
C177	354744709	47μF, 16V, Elect.
C179	354780479	4.7μF, 50V, Elect.
C401	354721019	100μF, 6.3V, Elect.
C402	354744709	47μF, 16V, Elect.
C403	371121034	0.01μF±5%, 50V, Mylar
C404, C405	354744709	47μF, 16V, Elect.
C406, C407	391242217	220μF, 16V, Elect.
C408	354722219	220μF, 6.3V, Elect.
C409, C410	373301024	1000pF±5%, 125V, PP
C411, C412	373301514	150pF±5%, 125V, PP
C413, C414	354742209	22μF, 16V, Elect.
C415, C416	371122424	2400pF±5%, 50V , Mylar
C417, C418	371122224	2200pF±5%, 50V , Mylar
C419, C420	371124724	4700pF±5%, 50V , Mylar
C421, C422	371125624	5600pF±5%, 50V , Mylar
C423, C424	371123324	3300pF±5%, 50V , Mylar
C425, C426	371121224	1200pF±5%, 50V , Mylar
C427-C434	391242207	22μF, 16V, Elect.
C435-C438	354744709	47μF, 16V, Elect.
C441-C444	373303314	330pF±5%, 125V, PP
C445, C446	371122224	2200pF±5%, 50V, Mylar
C447, C448	371124724	4700pF±5%, 50V, Mylar
C501-C503	354744709	47μF, 16V, Elect.
C505	354762219	220μF, 35V, Elect.
C901, C902	352752229	2200μF, 25V, Elect.
C907, C908	354780109	1μF, 50V, Elect.
C909	354782209	22μF, 50V, Elect.
C910	354762209	22μF, 35V, Elect.
C911, C961	375101045	0.1μF±10%, 125V, Plastic
C951, C952	352753329	3300μF, 25V, Elect.
C953, C954	354742219	220μF, 16V, Elect.
C955, C956	354780109	1μF, 50V, Elect.
C957	354741009	10μF, 16V, Elect.
C958	354744719	470μF, 16V, Elect.
C959, C960	379121035	0.01μF±10%, 50V, Plastic

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R108	5210066	N06HR22KBD, Semi-fixed
R110	5210060	N06HR2.2KBD, Semi-fixed
R122, R125	5210066	N06HR22KBD, Semi-fixed
R147	5210058	N06HR1KBD, Semi-fixed
R178	5210060	N06HR2.2KBD, Semi-fixed
R505	5210061 or	N06HR3.3KBD or
	5210117	N06HR3KBC, Semi-fixed
	Plugs	
P101	25055136	NPLG-6P120
P102	25055139	NPLG-9P123
P103	25055154	NPLG-10P138
P104	25055157	NPLG-13P141
P105	25055190	NPLG-9P174
P106	25055146	NPLG-2P130
P107	25055150	NPLG-6P134
P108	25055045	NPLG-4P33
P109, P110	25055038	NPLG-2P29
P402	25055152	NPLG-8P136
	Terminal	
P401	25045236	NPJ-4PDBL110
	Radiators	
	27160176	RAD56
	27160145	RAD51
	Socket	
J5	2000939	NSAS-2P891
	Fuses	
QF101, QF102	252112	⚠ ICPN15, IC protector

OPTO./DIGITAL OUTPUT PC BOARD(NADG-3364-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q191	24120014	DF-1111/T, Photo coupler
P191	25045239	NPJ-1PORG-113, Terminal, Opto. output
P192	25045172	HSJ1003-01-020, Terminal RI
SC191	2000929	NSAS-12P882, Socket

DISPLAY CIRCUIT PC BOARD(NADIS-3365-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q701	22240179	CXP5058H-104QZ
Q703	22240173	LC6527H-3722
Q707	222963	LB1630
	Fluorescent tube	
Q702	212059	16BT-09GK
	Transistors	
Q704, Q705	2212600	DTA124ES
Q706	2212132 or	2SC2021-R or
	2212133	2SC2021-S
	Diodes	
D701-D704	223163	1SS133
D705	224650562 or	HZ5.6EB2 or
	224450562	MTZ5.6B
	Capacitors	
C701, C703	354721019	100μF, 6.3V, Elect.
	Resistors	
R735-R742	49163472408	4.7kohm×8, 1/10W, Network
	Switches	
S701-S736	25035548	NPS-111-S510
	Sockets	
SC701	2000891	NSAS-26P847
SC702	2000883	NSAS-18P839
SC703	2000732	NSAS-4P688
SC704	2000755	NSAS-4P711
SC705	2000892	NSAS-12P848

CIRCUIT NO.	PART NO.	DESCRIPTION
	Holder	
	27190656A	Display

POWER SWITCH PC BOARD(NAPS-3366-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
C941	3500065A	⚠ DE7150FZ103PCSA, Capacitor IS
P941	25035558	⚠ NPS-111-L520P, Power switch

HEADPHONE AMPLIFIER PC BOARD(NAAF-3367-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	222887	NJM4556S, IC
Q453, Q454	2211705 or	2SD655-E or
	2211706	2SD655-F, Transistors
C453, C454	354742219	220μF, 16V, Elect. capacitors
C455, C456	371122224	2200pF±5%, 50V, Mylar capacitors
C457, C458	354744709	47μF, 16V, Elect. capacitors
R451	5104242	N16RGM20KB30F, Variable resistor
R463, R464	442521014	100ohm, 1/2W, Metal oxide film resistors
P451	25055183	NPLG-2P167, Plug
SC451	2000917	NSAS-16P870, Socket

HEADPHONE TERMINAL PC BOARD(NAAF-3368-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
P491	25045139	HLJ0540-01-010, Headphone terminal

SWITCH PC BOARD(NASW-3369-1)

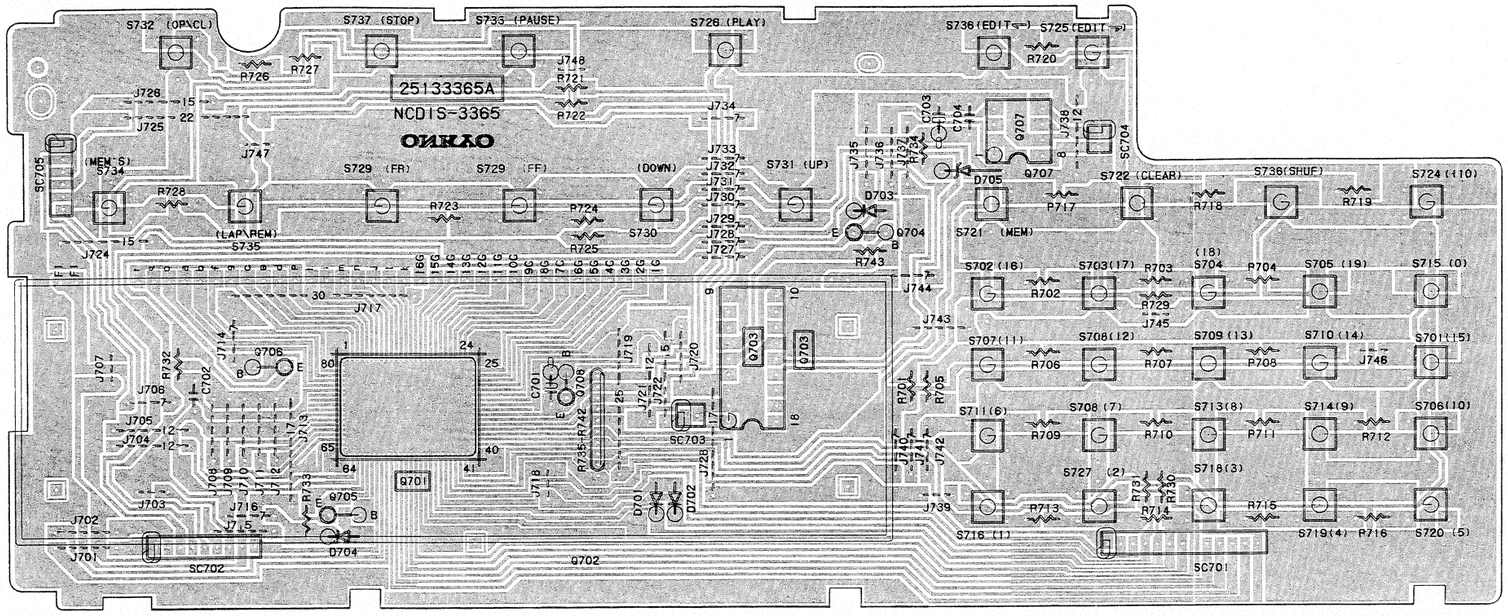
CIRCUIT NO.	PART NO.	DESCRIPTION
U751	241068	BX-1407, IC
D751, D752	225142	SEL2913K, LEDs
C751	354721019	100μF, 6.3V, Elect. capacitor
S751	25065325	NSS-23128, Slide switch
S752-S755	25035548	NPS-111-S510, Push switches
P701	25055187	NPLG-6P171, Plug
	27190499A	Holder

TERMINAL PC BOARD(NAETC-3359-1)

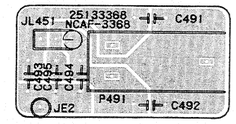
CIRCUIT NO.	PART NO.	DESCRIPTION
P001	25050361	NSCT-18P188, Socket
SC001	2000890	NSAS-12P846, Socket
SC002	2000873	NSAS-18P829, Socket

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

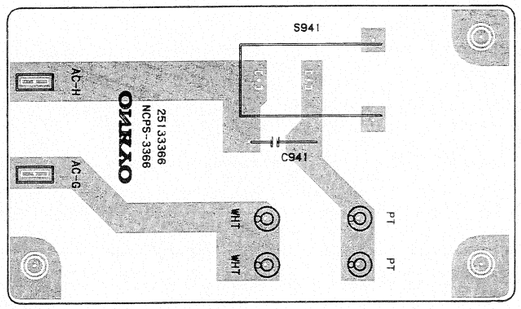
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



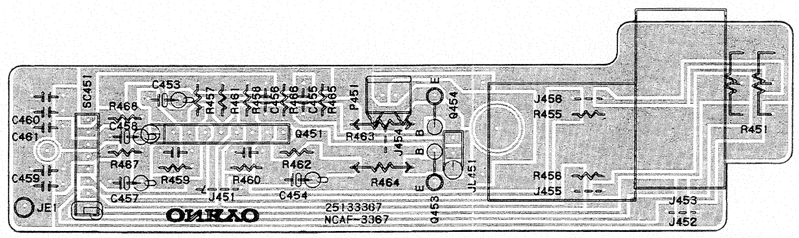
DISPLAY CIRCUIT PC BOARD



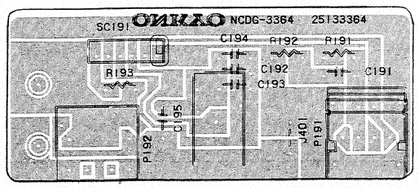
HEADPHONE TERMINAL PC BOARD



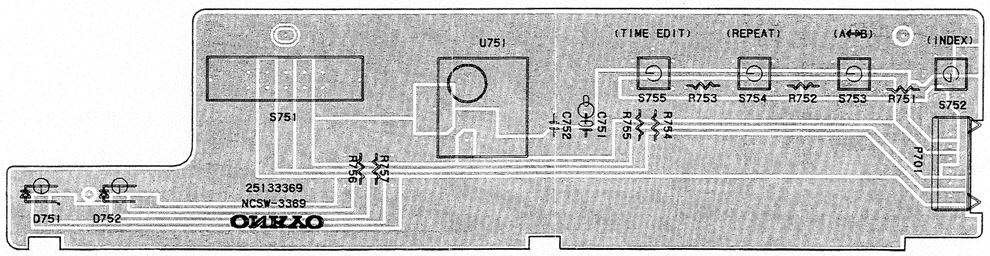
POWE SWITCH PC BOARD



HEADPHONE AMPLIFIER PC BOARD

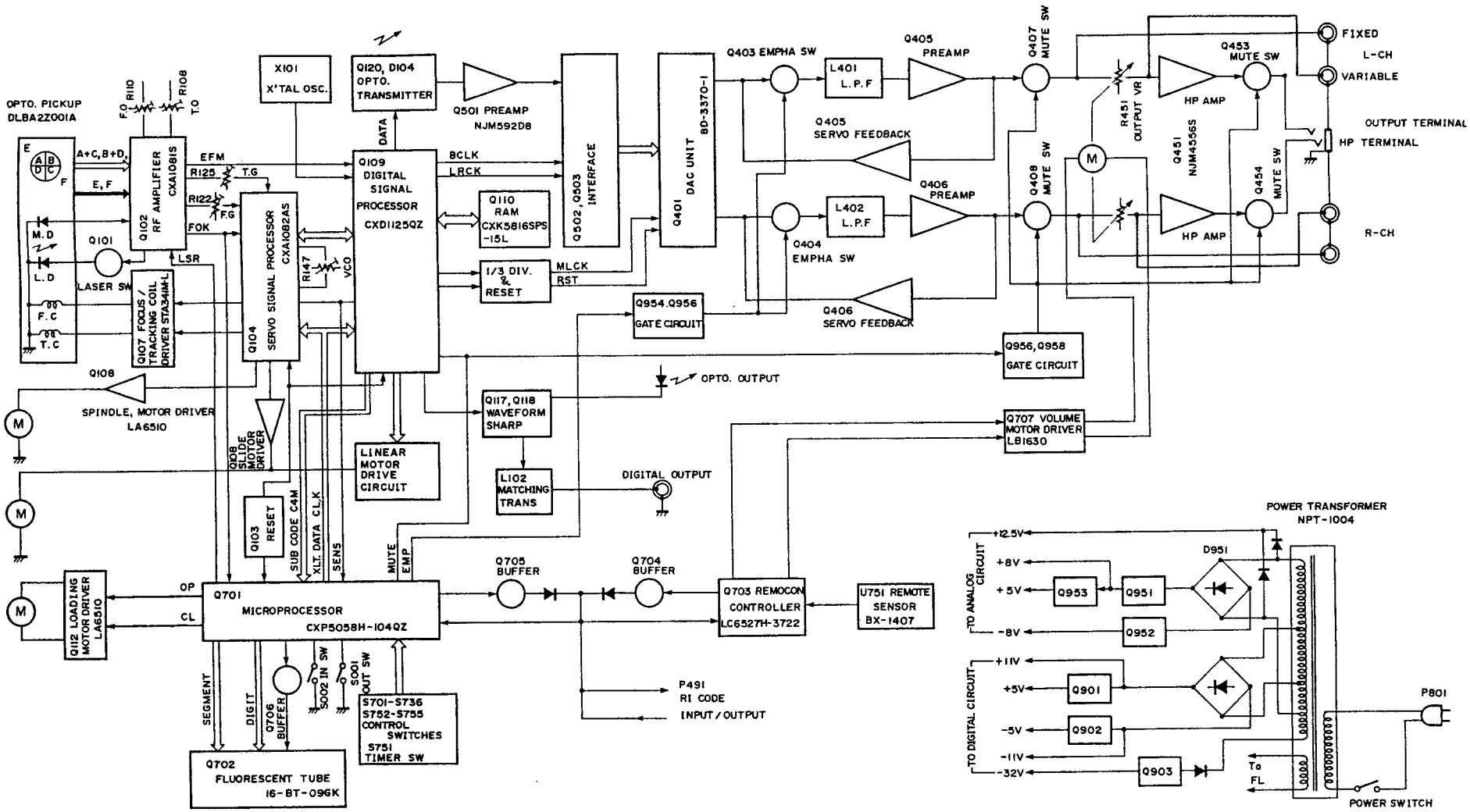


OPTO./DIGITAL OUTPUT PC BOARD



SWITCH PC BOARD

BLOCK DIAGRAM



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ONKYO® SERVICE MANUAL

Supl.

MODEL DX-6550

The signal processing IC used in the DX-6550 will change from the CXD-1125QZ to the CXD1125Q when the number of units produced passes that indicated below. The pin assignments of the above ICs are identical. However, as the CXD1125Q cannot be mounted as is because the pins are too short.
As a result, whereas the IC is mounted on the component side of the circuit board in the older models, in the new models it will be mounted on the soldered side. This necessitates certain changes in the main circuit board.

Number of units after which change takes place: 3814 p'cs. ~

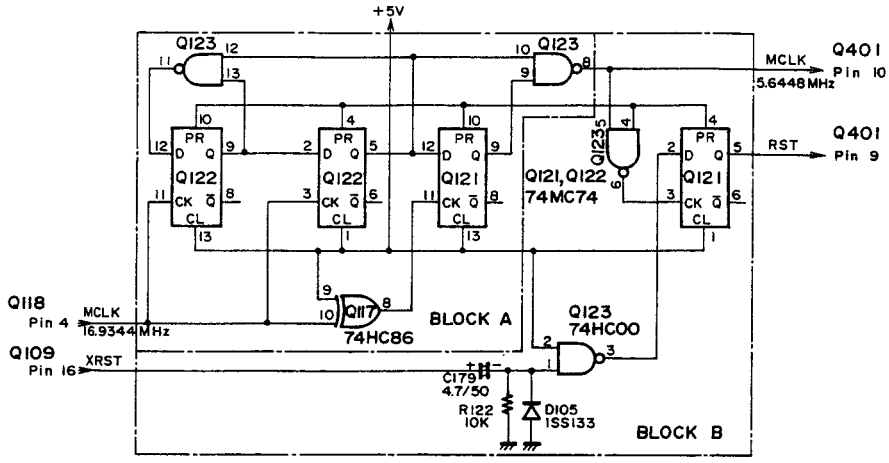
Change of parts

		After change		Before change	
Circuit No.	Part Name	Description	Part No.	Description	Part No.
U1	Main circuit pc board ass'y	NAAR-3505-2	1H048505-2	NAAR-3363-1	1H048563-1
Q109	IC	CXD-1125Q	22240130	CXD-1125QZ	22240127
U2	Opto./digital output terminal pc board ass'y	NADG-3506-2	1H048506-2	NADG-3364-1	1H048564-1

ONKYO
AUDIO COMPONENTS

CIRCUIT DESCRIPTION

1. Signals to the D/A converter



〈Fig. 1〉

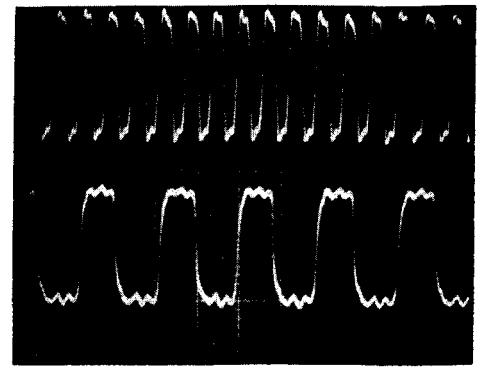


Photo 1
Upper part: System master clock (Q122 #3): 16.9344MHz
Lower part: D/A converter master clock (Q123 #8): 5.6448MHz
V:2V/div. H=0.1 μs/div.

Master clock (MCLK) and reset (RST) signals
The 16.9344MHz master clock signal is frequency divided by 3 in circuit block A shown by the box in Figure 1 to produce a 5.6448MHz clock signal which is output via Q401 #10. (See Photo 1.) This clock signal becomes the D/A converter's master clock signal. When power is turned on, a system reset signal (XRST) is input to C179, The one-shot pulse generation circuit indicated as block B in Figure 1 then outputs a downward pulse via Q121 #5. (See Photo 2.)

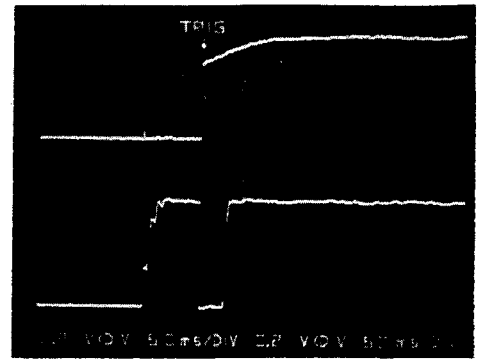
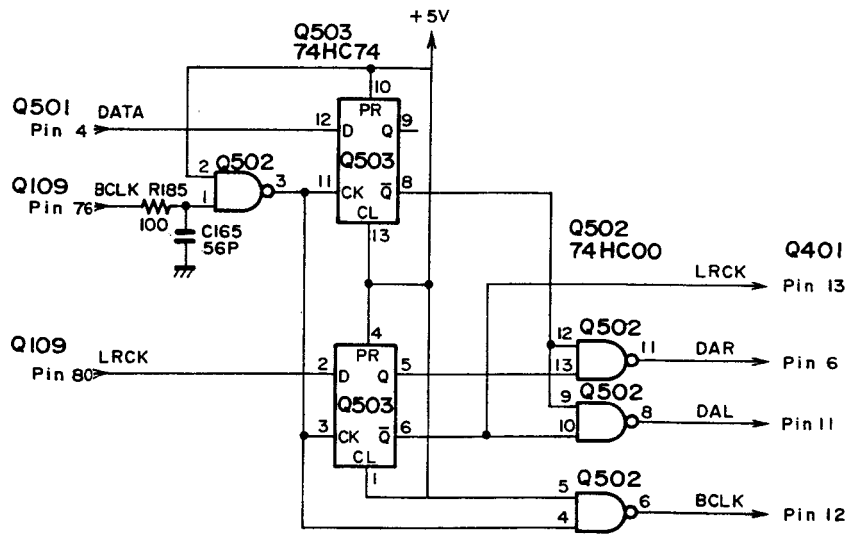


Photo 2
Upper part: XRST (Q109 #16)
Lower part: RST (Q121 #5)
V:2V/div. H=50 ms/div.



〈Fig. 2〉

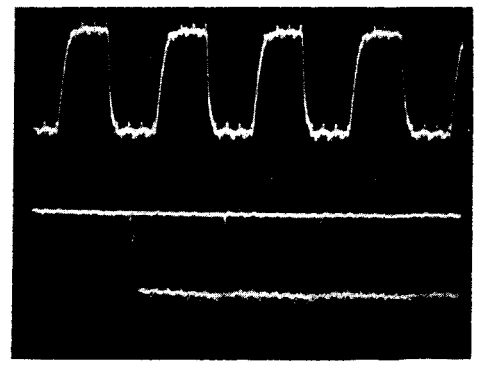


Photo 3
Upper part: Bit clock (BCLK) (Q502 #1)
Lower part: Data signal (DATA) (Q503 #12)
V:2V/div. H=0.2 μs/div.

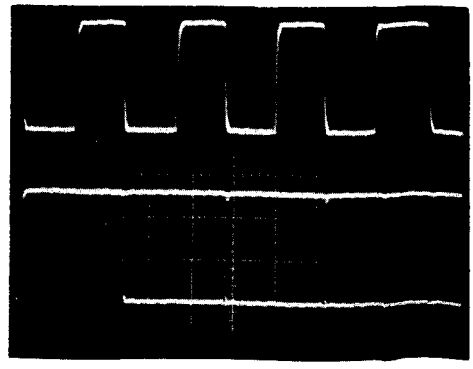
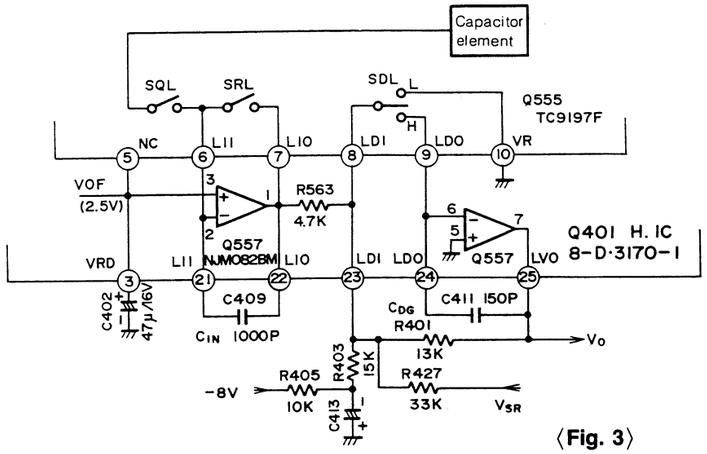


Photo 4
Upper part: Bit clock (BCLK) (Q502 #3)
Lower part: Data signal (DATA) (Q503 #8)
V:2V/div. H=0.2 μs/div.

L/R data signals (DAL, DAR), bit clock (BCLK) and channel clock (LRCK)

The data signal reproduced from the optical transfer circuit is later than the original data signal (Q109 #78). (See Photo 3.) In order to phase align it with the bit clock signal, a data signal synchronized with the bit clock signal is obtained from Q503 #8 as illustrated in Figure 2. (See Photo 4.) Also, the channel clock is obtained from Q401 #13 after synchronization with the bit clock. The data signal is divided into separate left and right channel data signals under the control of this channel clock signal. (See Photo 5.)



〈Fig. 3〉

D/A converter circuit board operation

Step	SQL	SRL	SDL	Operation description
1	ON	ON	L	Reset action: CIN, CDG are discharged.
2	ON	OFF	L	Integral control action: CIN is charged.
3	OFF	OFF	L	Hold action: CIN charge is held.
4	OFF	OFF	H	Deglitching action: Charge built up in CIN is transferred to CDG.

The D/A converter integrator output Q401 #22 swings the 2.5V D/A conterter standard voltage toward the ground as the maximum level. Therefore, the 2.5V DC offset becomes a weighted waveform. (See Photo 6.) A current (fixed bias current from R403 and R405 and R427 super servo output current) equivalent to this offset voltage is input to the deglitcher amplifier, canceling it. As a result, an output free of offset voltage is obtained from the deglitcher amplifier oputput Q401 #25. (See Photo 6.) For reference, see the integrator output time axis expansion (f=10kHz, 0dB) and the waveform when there is no input signal (STOP). (See Photo 7.)

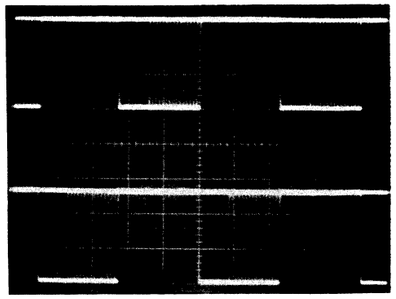


Photo 5
Upper part: L channel data signal (Q502 #8)
Lower part: R channel data signal (Q502 #11)
V:2V/div. H=5 µs/div.
Note: Synchronize signal of oscilloscope: LRCK

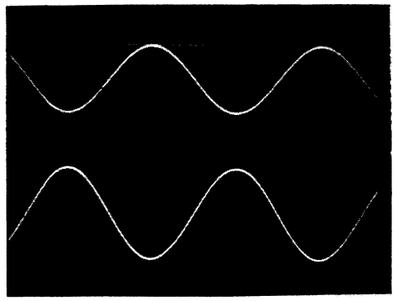


Photo 6
Upper part: Intergrator output
Lower part: Deglitching output
V:1V/div. H=0.2 µs/div.
Note: Play the track 2 of test disc VEDS-18.

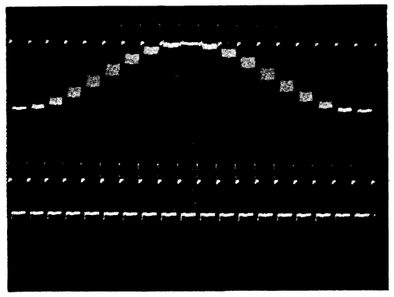
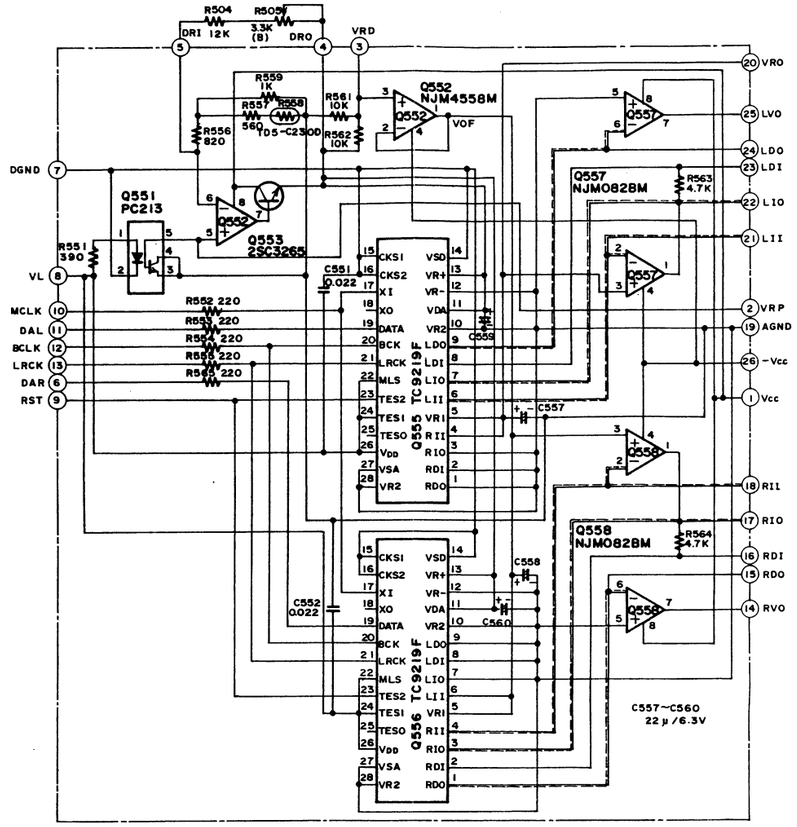
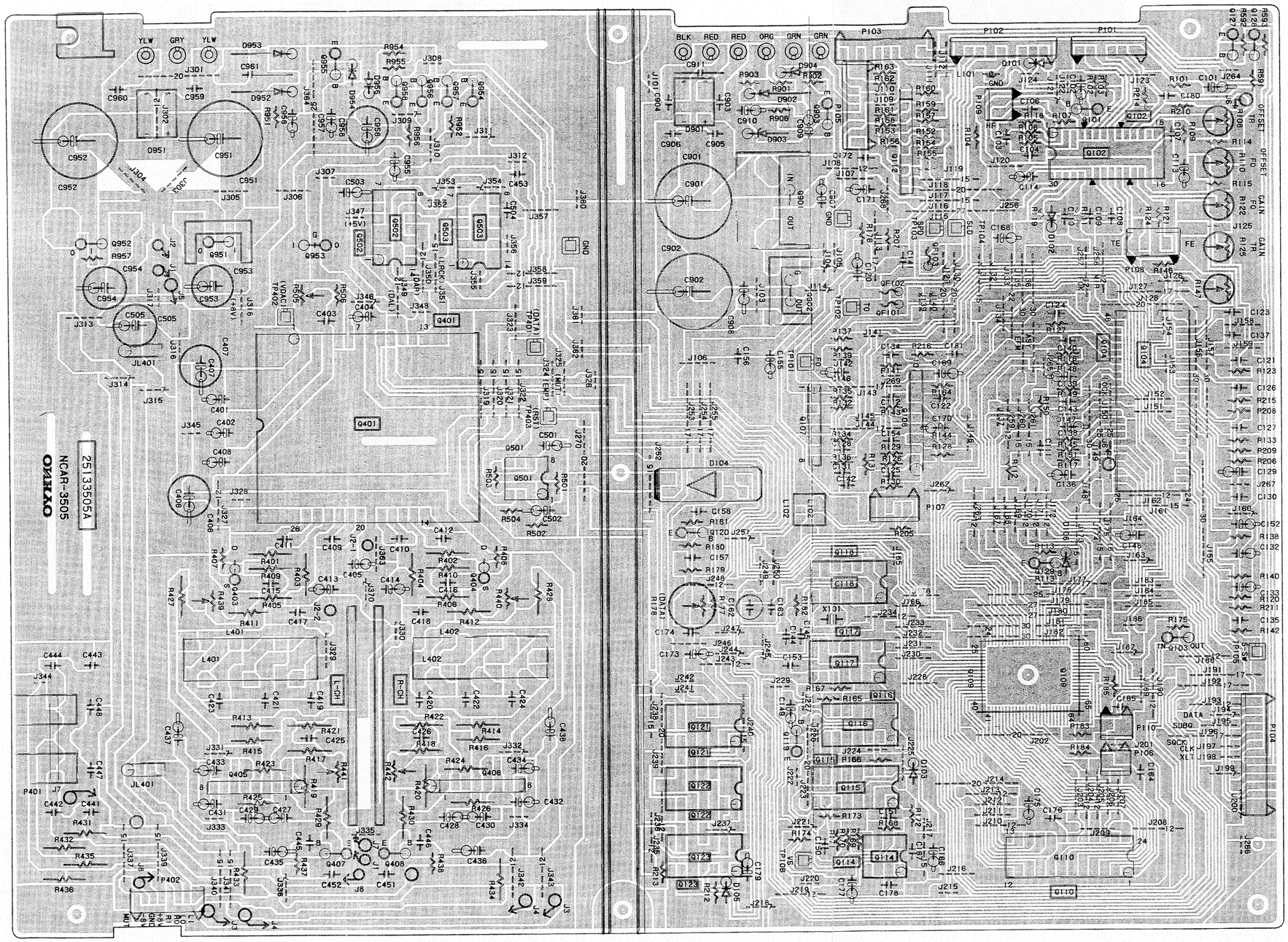


Photo 7
Upper part: Playback mode
Lower part: Stop mode
V:1V/div. H=10 µs/div.
Note: Play the track 5 of test disc YEDS-18.

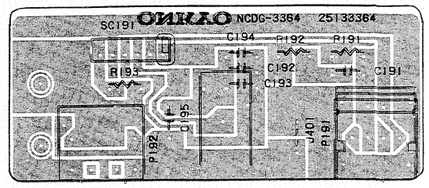


PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

(After change)



Main circuit pc board

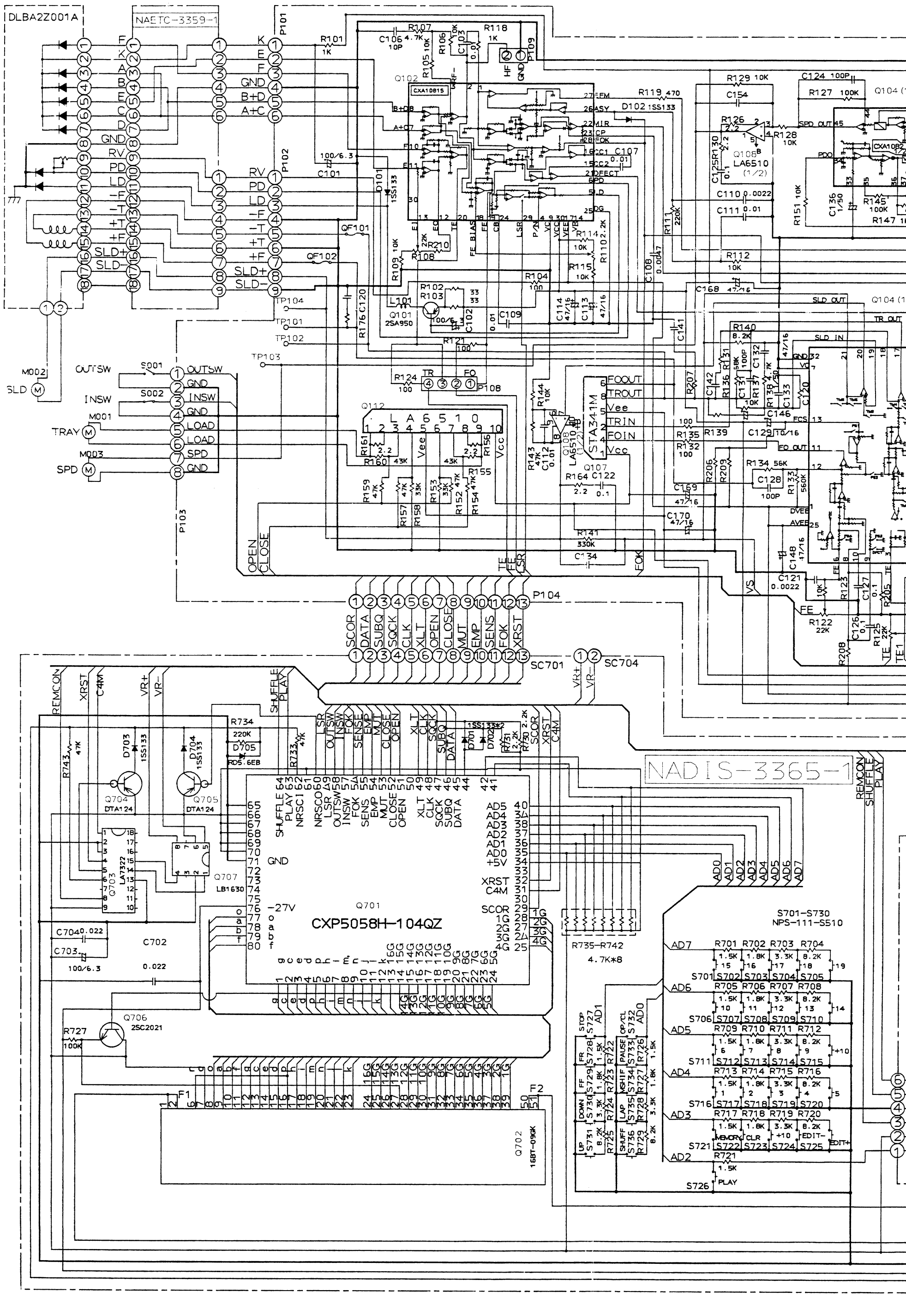


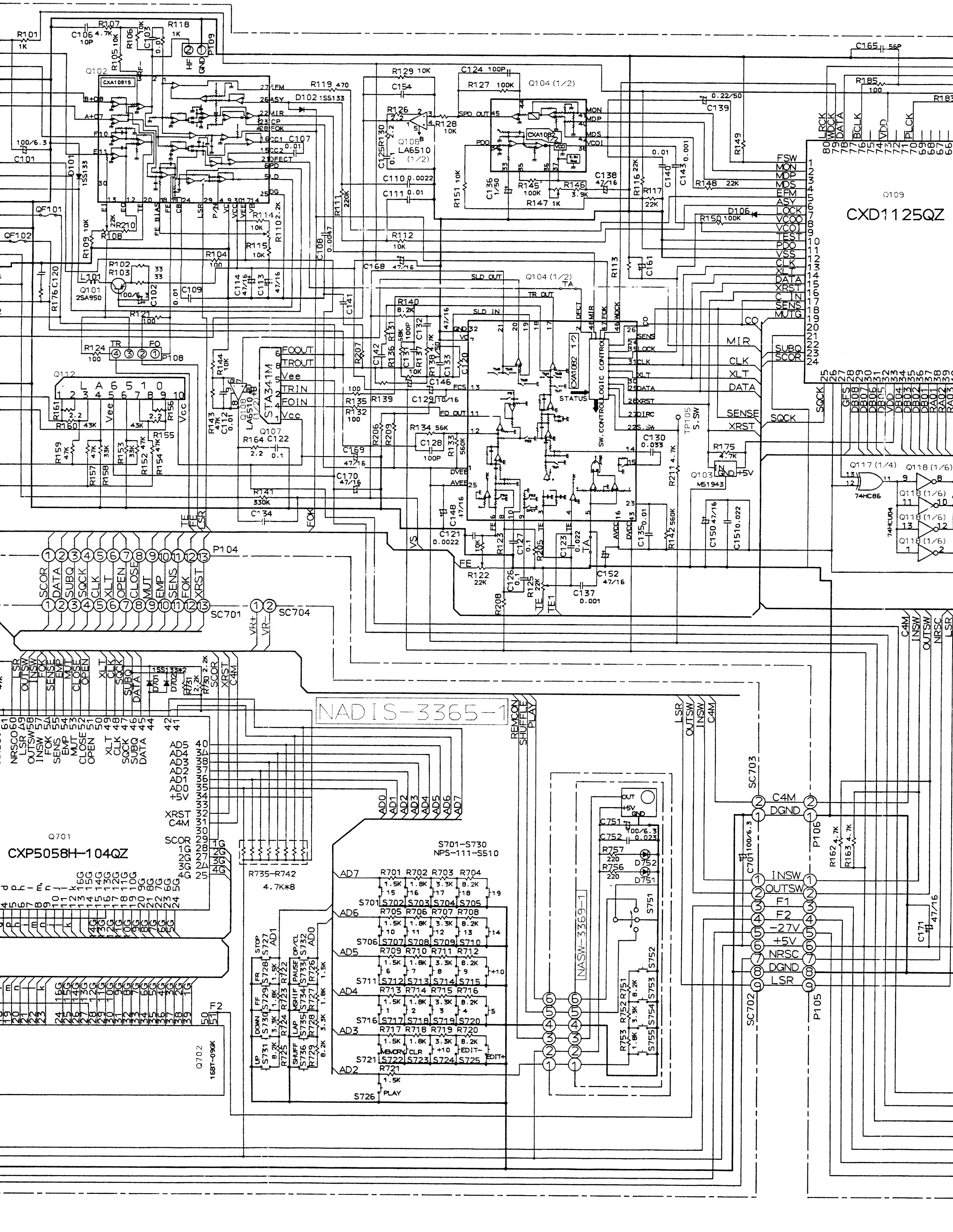
Opto./digital output pc board

PN 0M3269-1 A809

VIDE-V07006 / Druck 9

SCHEMATIC DIAGRAM




Q109
CXD1125QZ
Q102
CXA1081S
Q104 (1/2)
CXA1082
Q105
LA6510
Q106
LA6510
Q107
STA341M
Q108
LA6510
Q112
LA6510
Q101
2SA950
Q103
M51943
Q117 (1/4)
74HC86
Q118 (1/6)
74HCU04
Q701
CXP5058H-104QZ
Q702
16BT-09GK
P104
P105
P106
P108
P109
SC701
SC702
SC703
SC704
TP105
NADIS-3365-1
NASW-3369-1
NPS-111-S510
R735-R742
4.7K*8
S701-S730
SW. CONTROL LOGIC CONTROL
STATUS
FSW
MON
MDP
MDS
EFM
ASY
LOCK
VCOO
VCOI
TEST
PDO
VSS
CLK
XLT
DATA
XRST
C_IN
SENS
MUTG
CO
MIR
SUBQ
SCOR
SQCK
SENSE
XRST
LRCK
WDCK
DATA
BCLK
VDD
PLCK
SCOR
SUBQ
SQCK
CLK
XLT
DATA
SENS
XRST
MUT
EMP
SENS
FOK
XRST
C4M
INSW
OUTSW
NRSC
LSR
C4M
DGND
INSW
OUTSW
F1
F2
-27V
+5V
NRSC
DGND
LSR
REMCON
SHUFFLE
PLAY
STOP
PAUSE
OP/CL
FR
FF
MSHIF
DOWN
LAP
UP
SHUFF
MEMORY
CLR
EDIT-
EDIT+
PLAY
F2

5 6 7 8

NAAR-3363-1

Q109
CXD1125QZ

Q110
CXK5816
or
LC6517

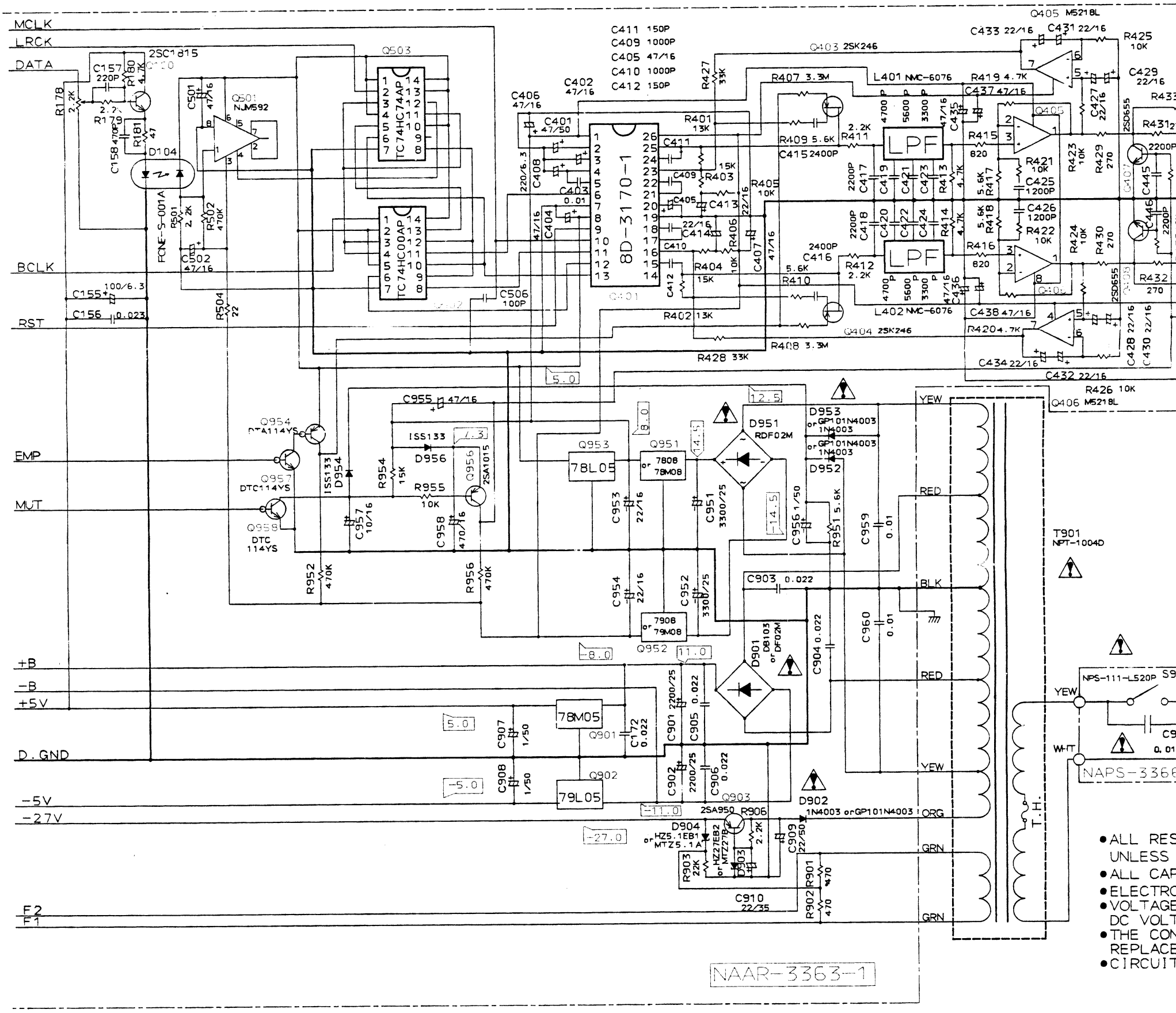
X101
16.9344MHz

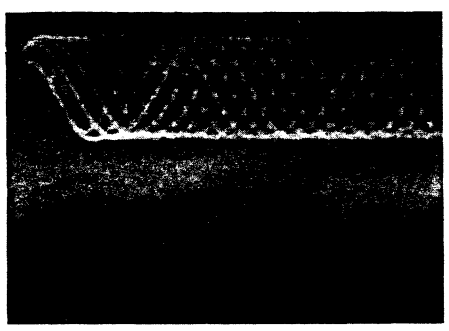
NADG-3364-1

NASW-3369-1

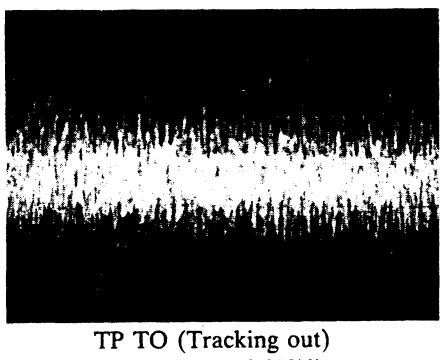
ONKYO CORPORATION

SCHEMATIC DIAGRAM

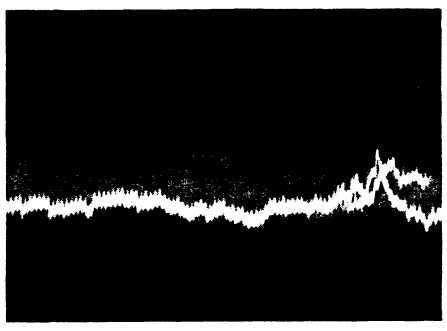




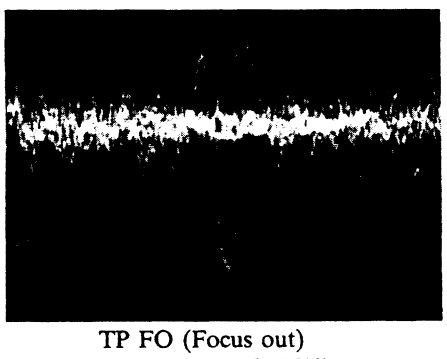
TP RF (RF signal)
Vertical : 1V/div.
Holizontal : 1 ms/div.
DC, Ground: Center



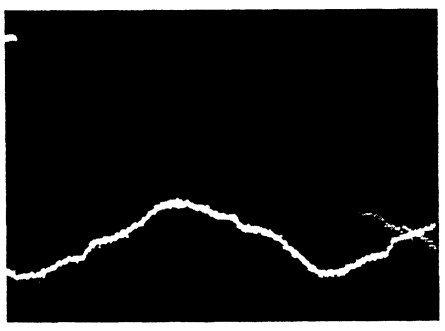
TP TO (Tracking out)
Vertical : 0.2V/div.
Holizontal : 0.5 ms/div.
DC, Ground: Center



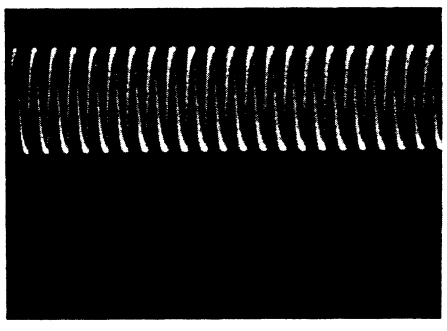
TP SPD (Spindle out)
Vertical : 1V/div.
Holizontal : 5 ms/div.
DC, Ground: Center



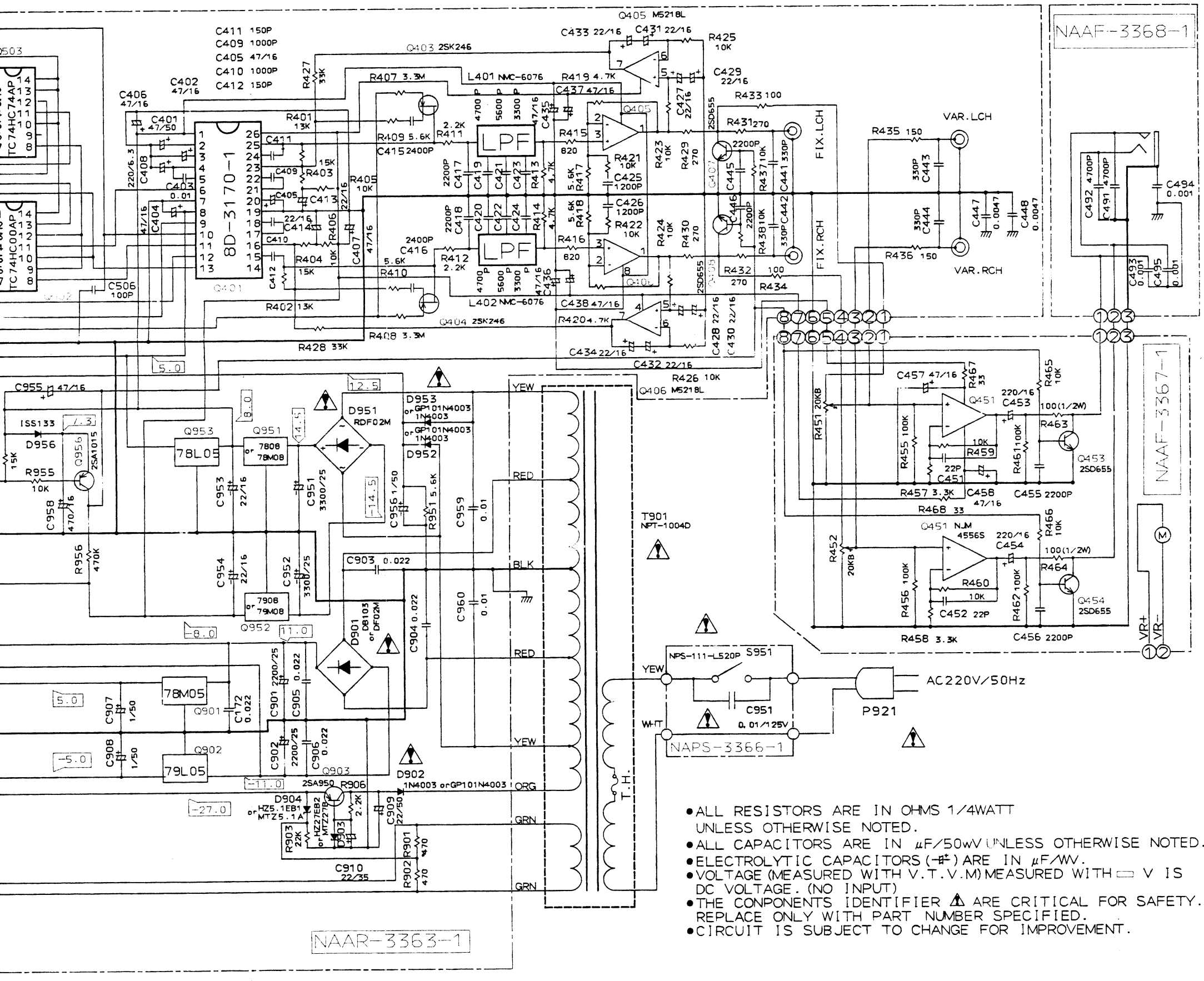
TP FO (Focus out)
Vertical : 0.5V/div.
Holizontal : 0.5 ms/div.
DC, Ground: Center



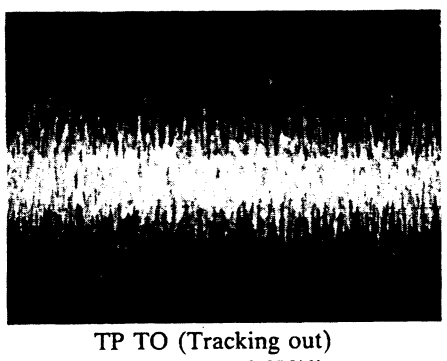
TP SLD (Slide out)
Vertical :2V/div.
Holizontal :20 ms/div.
Top :Real
Bottom :Storage



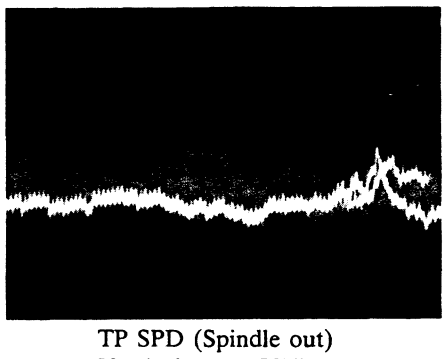
P110 PLCK
Vertical : 0.5V/div.
Holizontal : 0.2 μs/div.
DC, Ground: Center



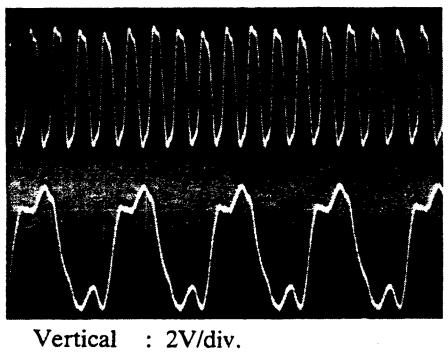
- ALL RESISTORS ARE IN OHMS 1/4WATT UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN μF/50wV UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (⊣⁺) ARE IN μF/WV.
- VOLTAGE (MEASURED WITH V.T.V.M) MEASURED WITH ▭ V IS DC VOLTAGE. (NO INPUT)
- THE CONPONENTS IDENTIFIER ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



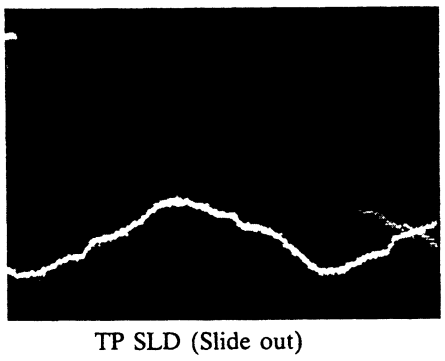
TP TO (Tracking out)
Vertical : 0.2V/div.
Holizontal : 0.5 ms/div.
DC, Ground: Center



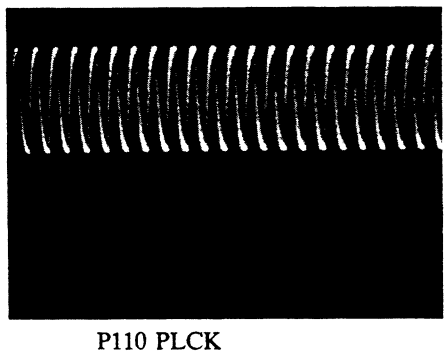
TP SPD (Spindle out)
Vertical : 1V/div.
Holizontal : 5 ms/div.
DC, Ground: Center



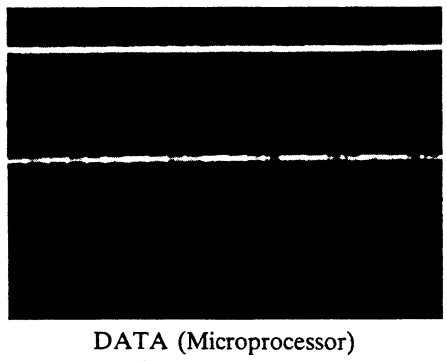
Vertical : 2V/div.
Holizontal: 0.1 μs/div.
X'tal (Q118 Pin 4)/C4M (R164)
AC



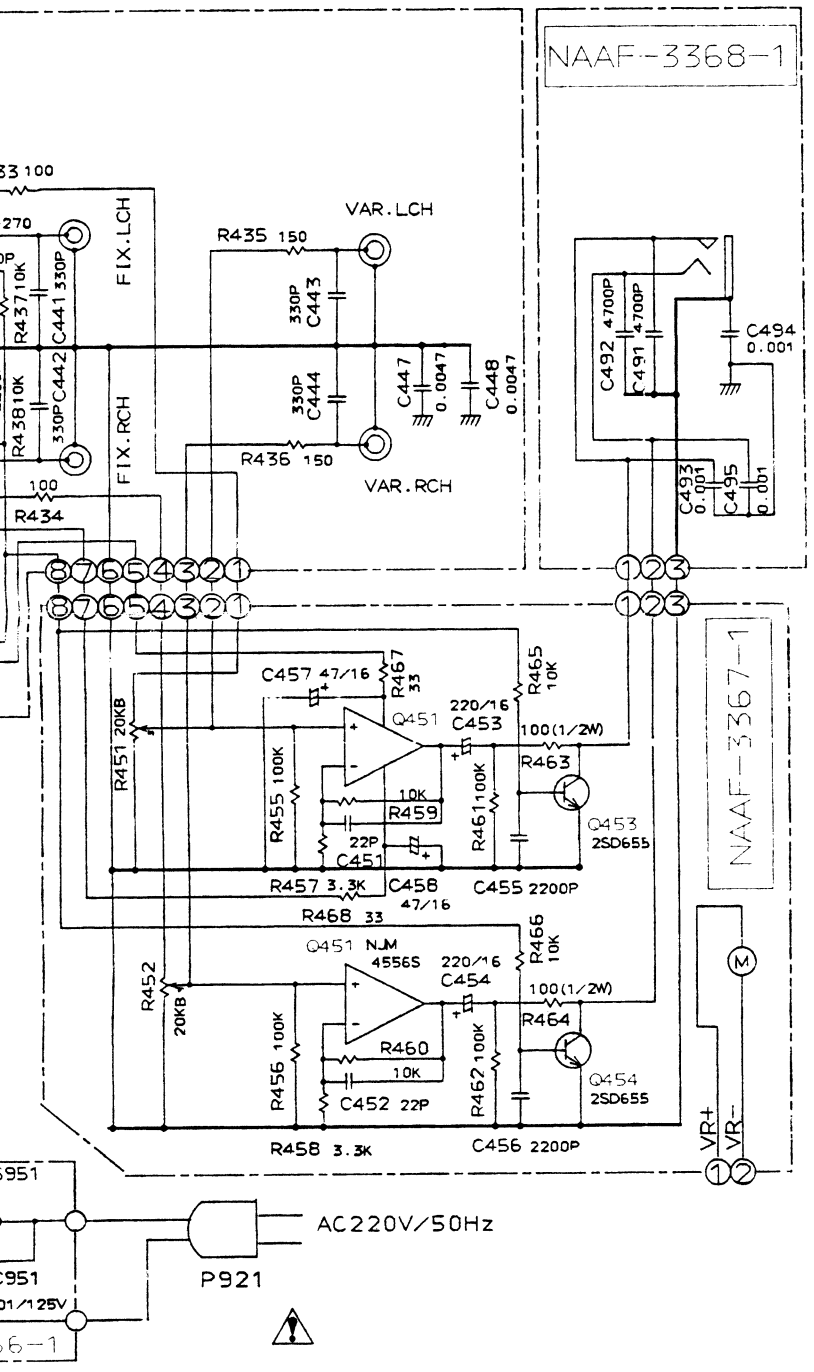
TP SLD (Slide out)
Vertical :2V/div.
Holizontal :20 ms/div.
Top :Real
Bottom :Storage



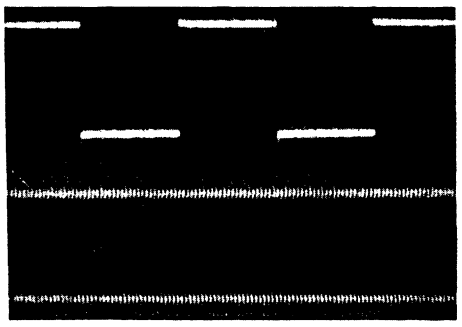
P110 PLCK
Vertical : 0.5V/div.
Holizontal : 0.2 μs/div.
DC, Ground: Center



DATA (Microprocessor)
Vertical : 2V/div.
Holizontal : 0.5 ms/div.
DC, Ground: Center

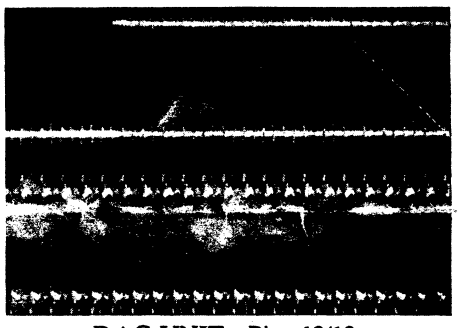


ESISTORS ARE IN OHMS 1/4WATT
S OTHERWISE NOTED.
APACITORS ARE IN μF/50wV UNLESS OTHERWISE NOTED.
ROLYTIC CAPACITORS (-#+) ARE IN μF/WV.
GE (MEASURED WITH V.T.V.M) MEASURED WITH ▭ V IS
LTAGE. (NO INPUT)
ONPONENTS IDENTIFIER ⚠ ARE CRITICAL FOR SAFETY.
CE ONLY WITH PART NUMBER SPECIFIED.
T IS SUBJECT TO CHANGE FOR IMPROVEMENT.

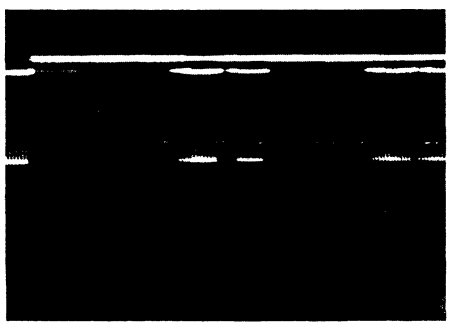


DAC UNIT Pins 13/12
Vertical : 2V/div.
Holizontal: 5 μs/div.
AC

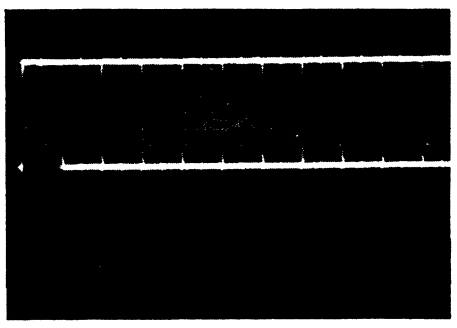
XLT
Vertical : 2V/div.
Holizontal: 0.5 ms/div.



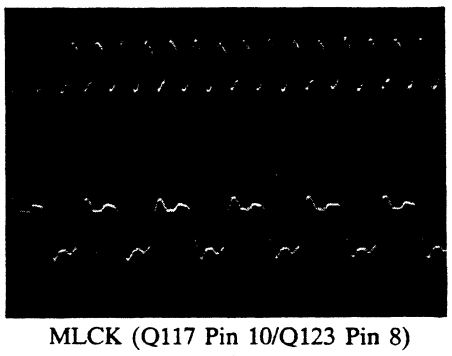
DAC UNIT Pins 13/12
Vertical : 2V/div.
Holizontal: 1 μs/div.
AC



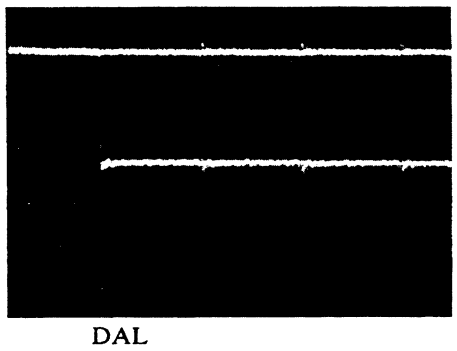
CLK
Vertical : 2V/div.
Holizontal : 50 μs/div.
DC, Ground: Center



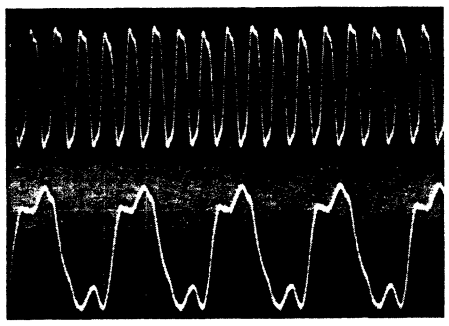
DAC Pins 11/6
Vertical : 2V/div.
Holizontal : 0.5 ms/div.
DC, Ground: Center



MLCK (Q117 Pin 10/Q123 Pin 8)
Vertical : 5V/div.
Holizontal: 0.1 μs/div.

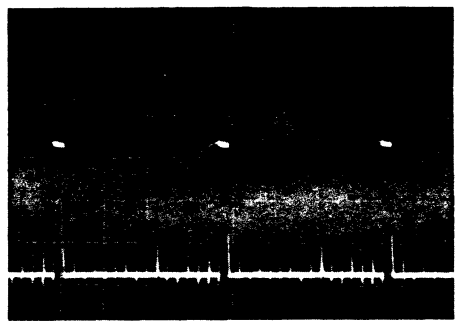


DAL
Vertical : 2V/div.
Holizontal : 0.2 μs/div.
DC, Ground: Center

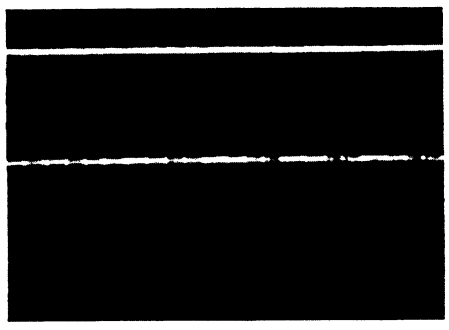


Vertical : 2V/div.
Holizontal: 0.1 μs/div.
X'tal (Q118 Pin 4)/C4M (R164)
AC

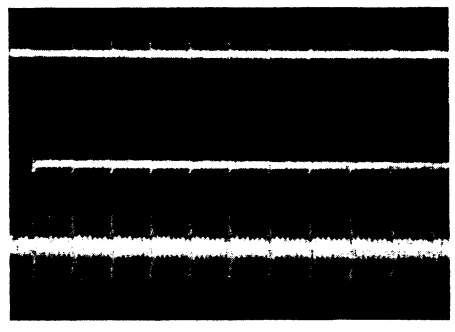
LRCK (Q109 Pin 80)
Vertical : 2V/div.
Holizontal : 10 μs/div.
DC, Ground: Center



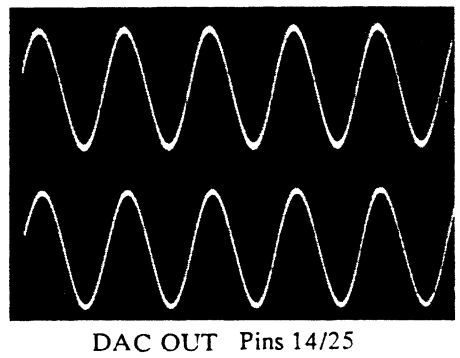
Grid
Vertical : 10V/div.
Holizontal : 1 ms/div.
DC, Ground: Center



DATA (Microprocessor)
Vertical : 2V/div.
Holizontal : 0.5 ms/div.
DC, Ground: Center



Q503 Pin 2/Pin 11
Vertical : 2V/0.5V
Holizontal: 0.5 μs/div.



DAC OUT Pins 14/25
V : 2V
H : 0.5 ms